SOCIAL IMPACT ASSESSMENT

FOR

POORTJIE WES PV SEF CLUSTER GRID CONNECTION

WESTERN CAPE PROVINCE

JUNE 2022

Prepared for

SAVANNAH ENVIRONMENTAL

By

Tony Barbour and Schalk van der Merwe

Tony Barbour
ENVIRONMENTAL CONSULTING AND RESEARCH

10 Firs Avenue, Claremont, 7708, South Africa
(Tel) 27-21-761 2355 - (Fax) 27-21-761 2355- (Cell) 082 600 8266
(E-Mail) tbarbour@telkomsa.net

EXECUTIVE SUMMARY

INTRODUCTION AND LOCATION

The Poortjie Wes Photovoltaic (PV) Solar Energy Facility (SEF) Cluster (the "Cluster") entails the development of five (5) solar energy facilities. The study area is located within the Beaufort West Renewable Energy Development Zone (REDZ), approximately 70 km to the south west of the town of Beaufort West in the Beaufort West Municipality (BWM) in the Western Cape Province (Figure 1.1). The grid infrastructure associate with the Cluster forms the focus of the Basic Assessment (BA).

Tony Barbour was appointed to undertake a specialist Social Impact Assessment (SIA) as part of the Basic Assessment (BA) process.

SUMMARY OF KEY FINDINGS

The assessment section is divided into:

- Assessment of compatibility with relevant policy and planning context ("planning fit").
- Assessment of social issues associated with the construction phase.
- Assessment of social issues associated with the operational phase.
- Assessment of social issues associated with the decommissioning phase.
- Assessment of the "no development" alternative.
- Assessment of cumulative impacts.

POLICY AND PLANNING ISSUES

The findings of the review indicate that renewable energy is strongly supported at a national, provincial, and local level. At a national level the development of and investment in renewable energy is supported by the National Development Plan (NDP), New Growth Path Framework and National Infrastructure Plan, which all refer to renewable energy. Renewable energy is also supported at a provincial and local municipal level. The proposed site is also located within the Beaufort West REDZ. The area has therefore been identified as suitable for the establishment of large-scale solar energy facilities and associated infrastructure. The BWM IDP and SDF also support the development of renewable energy.

CONSTRUCTION PHASE

The key social issues associated with the construction phase include:

Potential positive impacts

- Creation of employment and business opportunities, and the opportunity for skills development and on-site training.

The construction phase will extend over a period of approximately 3-6 months and create in the region of 23-40 employment opportunities. The total wage bill will be in the region of R 1.5 million (2022 Rand values). Most of the low and semi-skilled employment opportunities are likely to benefit residents from local towns in the area, specifically Beaufort West. Most the beneficiaries are likely to be historically disadvantaged (HD) members of the community. This would represent a short term positive social benefit in an area with limited employment opportunities. A percentage

of the wage bill will be spent in the local economy which will also create opportunities for local businesses in KHM.

The capital expenditure associated with the construction of power line will be ~15-20 million (2022 Rand values) and will create opportunities for the local and regional and local economy. The sector of the local economy most likely to benefit from the proposed development is the local service industry. The potential opportunities for the local service sector would be linked to accommodation, catering, cleaning, transport, and security, etc. associated with the construction workers on the site. However, given the relatively small scale of the development and short construction period the benefits will be limited.

Potential negative impacts

- Impacts associated with the presence of construction workers on local communities.
- Noise, dust, and safety impacts of construction related activities and vehicles.
- Risk of veld fires.
- Risks posed to farming activities by construction workers.

The findings of the SIA indicate that the significance of the potential negative impacts is likely to be negligible. With mitigation they are rated as **Low Negative**. The potential negative impacts associated with the proposed construction of the power line can therefore be effectively mitigated if the recommended mitigation measures are implemented. Table 1 summarises the significance of the impacts associated with the construction phase.

Table 1: Summary of social impacts during construction phase

Impact	Significance No Mitigation / Enhancement	Significance With Mitigation / Enhancement
Creation of employment and business opportunities	Low (Positive)	Low (Positive)
Presence of construction workers and potential impacts on family structures and social networks	Low (Negative)	Low (Negative)
Impact of construction activities and vehicles	Low (Negative)	Low (Negative)
Risk of veld fires	Moderate Negative)	Low (Negative)
Safety risk, stock theft and damage to farm infrastructure associated with presence of construction workers	Moderate Negative)	Low (Negative)

OPERATION PHASE

The benefits associated with the Poortjies Wes PV SEF Cluster are dependent upon being able to connect to the national grid. The key social issues associated with the operational phase include:

Potential positive impacts
- Improve energy security and establishment of energy infrastructure.
- Creation of employment, skills development, and business opportunities.
- Generate income for landowners.

Potential negative impacts
- The visual impacts and associated impact on sense of place.
- Impact on farming operations.
- Risks posed to farming activities by maintenance workers.

The findings of the SIA indicate that the significance of the potential negative impacts is likely be **Low Negative** if the required mitigation measures are effectively implemented. The significance of the impacts associated with the operational phase are summarised in Table 2.

Table 2: Summary of social impacts during operational phase

Impact	Significance No Mitigation / Enhancement	Significance With Mitigation / Enhancement
Improve energy security and establishment of energy infrastructure	Moderate (Negative) [1]	Moderate (Positive) [2]
Creation of employment, skills development, and business opportunities during maintenance	Low (Positive)	Moderate (Positive)
Generate income for landowners	Low (Positive)	Moderate (Positive)
Visual impact and impact on sense of place	Low (Negative)	Low (Negative)
Impact on farming operations	Moderate (Negative)	Low (Negative)
Safety risk, stock theft and damage to farm infrastructure associated with presence of maintenance workers	Moderate (Negative)	Low (Negative)

CUMULATIVE IMPACT ON SENSE OF PLACE

The VIA notes that there are already existing high voltage power lines that traverse the study area, namely the Droerivier/hydra 2 400 kV and Gamma/Kappa 1 765 kV and the droerivier/Hyrda 1&3 400 kV overhead lines. The addition of the proposed Poortjie Wes Cluster Grid Connection will therefore result in an increase in this type of

[1] Assumes grid infrastructure is not developed
[2] Assumes grid infrastructure is developed

infrastructure within the region and could result in a cumulative visual impact. However, the site is located within the Beaufort West REDZ. The area has therefore been identified as suitable for the establishing of large scale renewable energy facilities and associated grid infrastructure.

NO-DEVELOPMENT OPTION

The No-Development option would represent a lost opportunity for South Africa to improve energy security and supplement its current energy needs with flexible and cleaner (compared to coal) energy. Given South Africa's current energy security challenges and its position as one of the highest per capita producers of carbon emissions in the world, this would represent a negative social cost.

CONCLUSION AND RECOMMENDATIONS

Conclusion
The energy security benefits associated with the proposed Poortjie Wes PV SEF Cluster are dependent upon it being able to connect to the national grid via the establishment of grid connection infrastructure.

The findings of the SIA indicate that the significance of the potential negative social impacts for both the construction and operational phase of the proposed grid infrastructure are **Low Negative** with mitigation. The potential negative impacts can therefore be effectively mitigated if the recommended mitigation measures are implemented. The grid infrastructure is also located within the Beaufort West REDZ and Central Transmission Corridor. The establishment of proposed grid infrastructure for the Poortjie Wes PV SEF Cluster is therefore supported by the findings of the SIA.

Recommendation
Option A transmission line alignment located parallel to the Nelspoort-Murraysburg Road is the preferred option.

CONTENTS OF THE SPECIALIST REPORT – CHECKLIST

Regulation GNR 326 of 4 December 2014, as amended 7 April 2017, Appendix 6	**Section of Report**
(a) details of the specialist who prepared the report; and the expertise of that specialist to compile a specialist report including a *curriculum vitae*;	Section 1.5, Annexure A
(b) a declaration that the specialist is independent in a form as may be specified by the competent authority;	Section 1.6, Annexure B
(c) an indication of the scope of, and the purpose for which, the report was prepared;	Section 1.1, Section 1.2
(cA) an indication of the quality and age of base data used for the specialist report;	Section 1.2, Section 3,
(cB) a description of existing impacts on the site, cumulative impacts of the proposed development and levels of acceptable change;	Section 4
(d) the duration, date and season of the site investigation and the relevance of the season to the outcome of the assessment;	Interviews in 2021 (Annexure A)
(e) a description of the methodology adopted in preparing the report or carrying out the specialised process inclusive of equipment and modelling used;	Section 1.2, Annexure B
(f) details of an assessment of the specific identified sensitivity of the site related to the proposed activity or activities and its associated structures and infrastructure, inclusive of a site plan identifying site alternatives;	Section 4, Section 5,
(g) an identification of any areas to be avoided, including buffers;	Section 4
(h) a map superimposing the activity including the associated structures and infrastructure on the environmental sensitivities of the site including areas to be avoided, including buffers;	Refer to Visual Impact Assessment (VIA)
(i) a description of any assumptions made and any uncertainties or gaps in knowledge;	Section 1.4,
(j) a description of the findings and potential implications of such findings on the impact of the proposed activity, including identified alternatives on the environment, or activities;	Section 4, Section 5
(k) any mitigation measures for inclusion in the EMPr;	Section 4
(l) any conditions for inclusion in the environmental authorisation;	Section 4, Section 5
(m) any monitoring requirements for inclusion in the EMPr or environmental authorisation;	N/A
(n) a reasoned opinion— i. as to whether the proposed activity, activities or portions thereof should be authorised; iA. Regarding the acceptability of the proposed activity or activities; and ii. if the opinion is that the proposed activity, activities or portions thereof should be authorised, any avoidance, management and mitigation measures that should be included in the EMPr or Environmental Authorization, and where applicable, the closure plan;	Section 5.3
(o) a description of any consultation process that was undertaken during the course of preparing the specialist report	Annexure A, lists key stakeholders interviewed
(p) a summary and copies of any comments received during any consultation process and where applicable all responses thereto; and	Annexure A, lists key stakeholders interviewed
(q) any other information requested by the competent authority	N/A
Where a government notice gazetted by the Minister provides for any protocol or minimum information requirement to be applied to a	Comply with the Assessment

specialist report, the requirements as indicated in such notice will apply.	Protocols that were published on 20 March 2020, in Government Gazette 43110, GN 320. This specifically includes Part A, which provides the Site Sensitivity Verification Requirements where a Specialist Assessment is required but no Specific Assessment Protocol has been prescribed. As at September 2020, there are no sensitivity layers on the Screening Tool for Socio-economic-features. Part A has therefore not been compiled for this assessment.

ACRONYMS

BESS	Battery Energy Storage System
BWM	Beaufort West Municipality
CKDM	Central Karoo District Municipality
DEA&DP	Department of Environmental Affairs and Development Planning
ECO	Environmental Control Officer
EIA	Environmental Impact Assessment
EMP	Environmental Management Plan
IDP	Integrated Development Plan
IPP	Independent Power Producer
kV	Kilovolts
LED	Local Economic Development
LM	Local Municipality
Mtoe	Million tonnes of oil equivalent
MW	Megawatt
PGWC	Provincial Government Western Cape
REDZ	Renewable Energy Development Zone
REIPPPP	Renewable Energy Independent Power Producers Procurement Programme
SEF	Solar Energy Facility
SDF	Spatial Development Framework
SIA	Social Impact Assessment

TABLE OF CONTENTS

SECTION 1: INTRODUCTION

1.1 INTRODUCTION

The Poortjie Wes Photovoltaic (PV) Solar Energy Facility (SEF) Cluster (the "Cluster") entails the development of five (5) solar energy facilities. The study area is located within the Beaufort West Renewable Energy Development Zone (REDZ), approximately 70 km to the south west of the town of Beaufort West in the Beaufort West Municipality (BWM) in the Western Cape Province (Figure 1.1). The grid infrastructure associate with the Cluster forms the focus of the Basic Assessment (BA).

Tony Barbour was appointed to undertake a specialist Social Impact Assessment (SIA) as part of the Basic Assessment (BA) process.

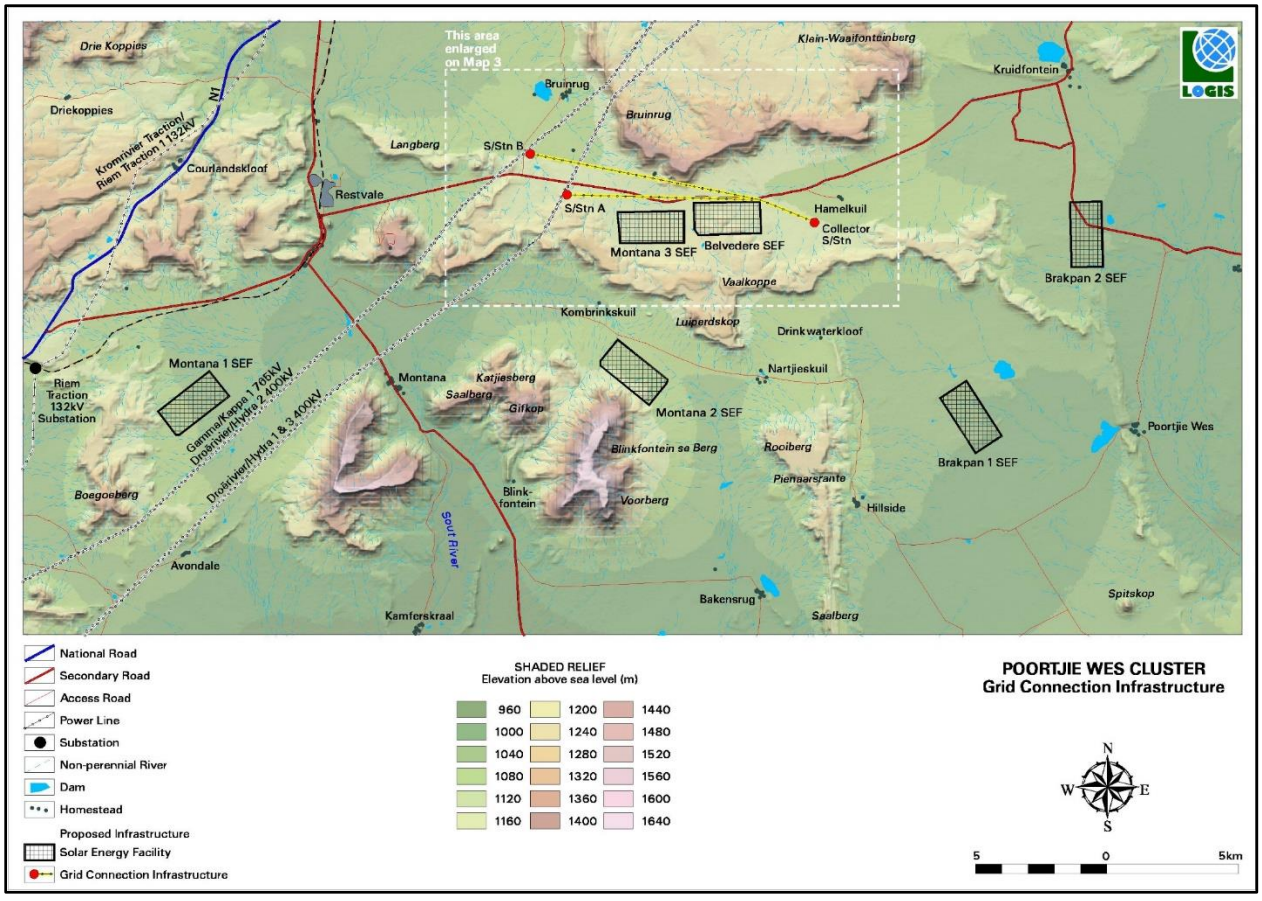


Figure 1.1: Location grid connection infrastructure (white dotted box)

1.2 TERMS OF REFERENCE AND APPROACH TO STUDY

The terms of reference for the SIA require:

- A description of the environment that may be affected by the activity and the manner in which the environment may be affected by the proposed facility.
- A description and assessment of the potential social issues associated with the proposed facility.
- Identification of enhancement and mitigation aimed at maximising opportunities and avoiding and or reducing negative impacts.

The approach to the SIA is based on the Western Cape Department of Environmental Affairs and Development Planning (DEA&DP) Guidelines for Social Impact Assessment (DEA&DP, 2007). The key activities in undertaken as part of the SIA process as embodied in the guidelines included:

- Describing and obtaining an understanding of the proposed intervention (type, scale, and location), the settlements, and communities likely to be affected by the proposed project.
- Collecting baseline data on the current social and economic environment.
- Identifying the key potential social issues associated with the proposed project.
- Site visit.
- Semi-structured interviews with key stakeholders and affected individuals and communities.
- Assessing and documenting the significance of social impacts associated with the proposed intervention.
- Consideration of other renewable energy projects that may pose cumulative impacts; and
- Identification of enhancement and mitigation measures aimed at maximizing opportunities and avoiding and or reducing negative impacts.

The identification of potential social issues associated with the proposed project is based on observations during the project site visit, review of relevant documentation, experience with similar projects and the general area. Annexure A contains a list of the secondary information reviewed and interviews conducted. Annexure B summarises the assessment methodology used to assign significance ratings to the assessment process.

1.3 PROJECT DESCRIPTION

Belvedere Solar Energy Facility is part of a cluster known as the Poortjie Wes Cluster (the "Cluster"). The Cluster entails the development of five (5) solar energy facilities. All six (6) renewable energy ("RE") facilities will connect to the proposed 132kV Belvedere Collector Switching Station (the "Collector Switching Station") via 132kV Overhead Lines ("OHLs"). The proposed Collector Switching Station will connect to the new Poortjie Wes 400/132kV LILO substation ("Poortjie Wes LILO MTS") via a 132kV OHL. The infrastructure is described in more detail below.

- A 132kV Belvedere Collector Switching Station (the "Collector Switching Station") via 132kV Overhead Lines ("OHLs"). The Collector Switching Station will be +/-16ha in extent and will be located on Remaining extent of Portion 2 of the Farm Belvedere Nr. 73, in the Beaufort West Municipality, Division of Murraysburg, Western Cape Province.
- The proposed Collector Switching Station will connect to the new Poortjie Wes 400/132kV LILO MTS ("Poortjie Wes LILO MTS") via a 132kV OHL (approximately 7km). This OHL will

cross the 400kV Droërivier/Hydra OHL. A corridor of 300m is being considered in the BA process, within which the 32m servitude for this power line will be located.
- The MTS will connect to either of the existing 400kV Droërivier/Hydra OHL) traversing the property via a Loop-in Loop-out ("LILO") connection. The 2 x 400kV LILO OHLs will be +/- 1km in length. It is unclear at this stage which of the two OHLs will be approved by Eskom. A corridor of 500m is being considered in the BA process, within which the two 55m servitudes for these power lines will be located.

Two alternative OHL corridor options have been identified, namely:

- Option A: Located largely parallel to the Nelspoort-Murraysburg Road[3].
- Option B: Located largely to the north of the Nelspoort-Murraysburg Road.

1.4 ASSUMPTIONS AND LIMITATIONS

1.4.1 Assumptions

Technical suitability
It is assumed that the development site represents a technically suitable site for the establishment of a solar energy facility and associated infrastructure. The site is also located within the Beaufort West Renewable Energy Development Zone (REDZ). The area has therefore been identified as being suitable for the establishment of renewable energy facilities and associated grid infrastructure.

Strategic importance of the project
The strategic importance of promoting solar energy is supported by the national and provincial energy policies. However, this does not mean that site related issues can be ignored or overlooked.

Fit with planning and policy requirements
Legislation and policies reflect societal norms and values. The legislative and policy context therefore plays an important role in identifying and assessing the potential social impacts associated with a proposed development. In this regard a key component of the SIA process is to assess the proposed development in terms of its fit with key planning and policy documents. As such, if the findings of the study indicate that the proposed development in its current format does not conform to the spatial principles and guidelines contained in the relevant legislation and planning documents, and there are no significant or unique opportunities created by the development, the development cannot be supported. However, the study recognises the strategic importance of solar energy and the technical, spatial and constraints required for solar energy facilities.

The site is also located within the Beaufort West Renewable Energy Development Zone (REDZ). The area has therefore been identified as being suitable for the establishment of renewable energy facilities and associated infrastructure.

1.4.2 Limitations

Demographic data
The information contained in some key policy and land use planning documents, such as Integrated Development Plans etc., may not contain data from Community Household Survey if 2016. However, this will not have a material impact on the findings of the study.

[3] Based on the findings of the SIA, Option A is the preferred option.

1.5 SPECIALIST DETAILS

Tony Barbour, the lead author of this report is an independent specialist with 28 years' experience in the field of environmental management. In terms of SIA experience Tony Barbour has undertaken in the region of 260 SIAs and is the author of the Guidelines for Social Impact Assessments for EIA's adopted by the Department of Environmental Affairs and Development Planning (DEA&DP) in the Western Cape in 2007. Tony Barbour has also undertaken the specialist SIA studies for ~ 100 renewable energy projects, including SEFs. A Copy of Tony Barbour's CV is contained in Annexure C.

Schalk van der Merwe, the co-author of this report, has an MPhil in Environmental Management from the University of Cape Town and has worked closely with Tony Barbour on a number of SIAs over the last fifteen years.

1.6 DECLARATION OF INDEPENDENCE

This confirms that Tony Barbour and Schalk van der Merwe, the specialist consultants responsible for undertaking the study and preparing the Draft SIA Report, are independent and do not have any vested or financial interests in the proposed SEF being either approved or rejected. Annexure D contains a signed declaration of independence by the lead author, Tony Barbour.

1.7 REPORT STUCTURE

The report is divided into five sections, namely:

- Section 1: Introduction.
- Section 2: Policy and planning context.
- Section 3: Overview of study area.
- Section 4: Identification and assessment of key issues.
- Section 5: Key Findings and recommendations.

SECTION 2: POLICY AND PLANNING CONTEXT

2.1 INTRODUCTION

Legislation and policy embody and reflect key societal norms, values, and developmental goals. The legislative and policy context therefore plays an important role in identifying, assessing, and evaluating the significance of potential social impacts associated with any given proposed development. An assessment of the "policy and planning fit[4]" of the proposed development therefore constitutes a key aspect of the Social Impact Assessment (SIA). In this regard, assessment of "planning fit" conforms to international best practice for conducting SIAs. Furthermore, it also constitutes a key reporting requirement in terms of the applicable Western Cape Department of Environmental Affairs and Development Planning's *Guidelines for Social Impact Assessment* (2007).

2.2 POLICY AND PLANNING ENVIRONMENT

For the purposes of the meeting the objectives of the SIA the following national, provincial and local level policy and planning documents were reviewed:

- National Development Plan (2011).
- New Growth Path Framework (2010).
- National Infrastructure Plan (2012).
- Integrated Energy Plan (2019).
- Strategic Environmental Assessment (SEA) for wind and solar PV energy in South Africa (CSIR, 2015)
- The Western Cape Infrastructure Framework (2013).
- The One Cape 2040 Strategy (2012).
- Beaufort West Municipality Integrated Development Plan (IDP)(2019/2020).
- Beaufort West Spatial Development Framework (SDF)(2013).

2.3 NATIONAL POLICY ENVIRONMENT

2.1.1 National Development Plan

The National Development Plan aims to eliminate poverty and reduce inequality by 2030. The NDP identifies a number of enabling milestones. Of relevance to the proposed development the NDP refers to the need to produce sufficient energy to support industry at competitive prices and ensure access for poor households, while reducing carbon emissions per unit of power by about one-third. In this regard the infrastructure is not just essential for faster economic growth and higher employment. It also promotes inclusive growth, providing citizens with the means to improve their own lives and boost their incomes. Infrastructure is essential to development.

[4] Planning fit" can simply be described as the extent to which any relevant development satisfies the core criteria of appropriateness, need, and desirability, as defined or circumscribed by the relevant applicable legislation and policy documents at a given time.

Chapter 3, Economy and Employment, identifies some of the structural challenges specific to South Africa, including an energy constraint that will act as a cap on growth and on options for industrialisation. The NDP notes that from an environmental perspective South Africa faces several related challenges. The reduction of greenhouse gas emissions and shift to a green, low-carbon economy, is one of these challenges.

In terms of implementation the NDP identifies three phases. The first two are of specific relevance to the proposed project. The first phase (2012–2017) notes that ensuring the supply of energy and water is reliable and sufficient for a growing economy. The second phase (2018–2023) involves building on the first phase to lay the foundations for more intensive improvements in productivity. The provision of affordable and reliable energy is a key requirement for this to take place.

Chapter 4, Economic infrastructure, notes that economic infrastructure provides the foundation for social and economic development. In this regard South Africa must invest in a strong network of economic infrastructure designed to support the country's medium- and long-term economic and social objectives. The plan envisages that, by 2030, South Africa will have an energy sector that promotes:

- Economic growth and development through adequate investment in energy infrastructure. The sector should provide reliable and efficient energy service at competitive rates, while supporting economic growth through job creation.
- Environmental sustainability through efforts to reduce pollution and mitigate the effects of climate change. More specifically, South Africa should have adequate supply security in electricity and in liquid fuels, such that economic activity, transport, and welfare are not disrupted.

The plan sets out steps that aim to ensure that, in 20 years, South Africa's energy system looks very different to the current situation. In this regard coal will contribute proportionately less to primary-energy needs, while gas and renewable energy resources, will play a much larger role.

2.1.2 The New Growth Path Framework

Government released the New Economic Growth Path Framework on 23 November 2010. The aim of the framework is to enhance growth, employment creation and equity. The policy's principal target is to create five million jobs over the next 10 years and reflects government's commitment to prioritising employment creation in all economic policies. The framework identifies strategies that will enable South Africa to grow in a more equitable and inclusive manner while attaining South Africa's developmental agenda. Central to the New Growth Path is a massive investment in infrastructure as a critical driver of jobs across the economy. In this regard the framework identifies investments in five key areas namely: ***energy***, transport, communication, water, and housing.

2.1.3 National Infrastructure Plan

The South African Government adopted a National Infrastructure Plan in 2012. The aim of the plan is to transform the economic landscape while simultaneously creating significant numbers of new jobs and strengthen the delivery of basic services. The plan also supports the integration of African economies. In terms of the plan Government will invest R827 billion over the next three years to build new and upgrade existing infrastructure. The aim of the investments is to improve access by South Africans to healthcare facilities, schools, water,

sanitation, housing, and electrification. The plan also notes that investment in the construction of ports, roads, railway systems, ***electricity plants***, hospitals, schools, and dams will contribute to improved economic growth.

As part of the National Infrastructure Plan, Cabinet established the Presidential Infrastructure Coordinating Committee (PICC). The Committee identified and developed 18 strategic integrated projects (SIPS). The SIPs cover social and economic infrastructure across all nine provinces (with an emphasis on lagging regions) and consist of:

- Five geographically-focussed SIPs.
- Three spatial SIPs.
- Three energy SIPs;
- Three social infrastructure SIPs.
- Two knowledge SIPs.
- One regional integration SIP.
- One water and sanitation SIP.

The three energy SIPS are SIP 8, 9 and 10.

SIP 8: Green energy in support of the South African economy
- Support sustainable green energy initiatives on a national scale through a diverse range of clean energy options as envisaged in the Integrated Resource Plan (IRP 2010).
- Support bio-fuel production facilities.

SIP 9: Electricity generation to support socio-economic development
- Accelerate the construction of new electricity generation capacity in accordance with the IRP 2010 to meet the needs of the economy and address historical imbalances.
- Monitor implementation of major projects such as new power stations: Medupi, Kusile and Ingula.

SIP 10: Electricity transmission and distribution for all
- Expand the transmission and distribution network to address historical imbalances, provide access to electricity for all and support economic development.
- Align the 10-year transmission plan, the services backlog, the national broadband roll-out and the freight rail line development to leverage off regulatory approvals, supply chain and project development capacity.

2.1.4 Strategic Environmental Assessment (SEA) for Wind and Solar PV energy in South Africa

The Strategic Environmental Assessment (SEA) for wind and solar PV energy in South Africa (CSIR, 2015) identified eight (8) ***Renewable Energy Development Zones*** (REDZs) (Phase 1 REDZs). The REDZs identified areas where large scale wind energy facilities can be developed in a manner that limits significant negative impacts on the environment while yielding the highest possible socio-economic benefits to the country. On 17 February 2016, the Cabinet of the Republic of South Africa (Cabinet) approved the gazetting of Renewable Energy Development Zones (REDZs). 8 REDZs and 5 Power Corridors have been identified. On 26 February 2021, Minister Barbara Dallas Creecy, published Government Notice No. 142, 144 and 145 in Government Gazette No. 44191 which identified 3 additional REDZs (Phase 2 REDZs) for implementation as well as the procedures to be followed when applying for environmental authorisation for electricity transmission or distribution infrastructure or large-scale wind and solar photovoltaic energy facilities in these REDZs. The total number of REDZ

is therefore 11 (Figure 2.2). The proposed grid connection infrastructure is located within the Beaufort West REDZ.

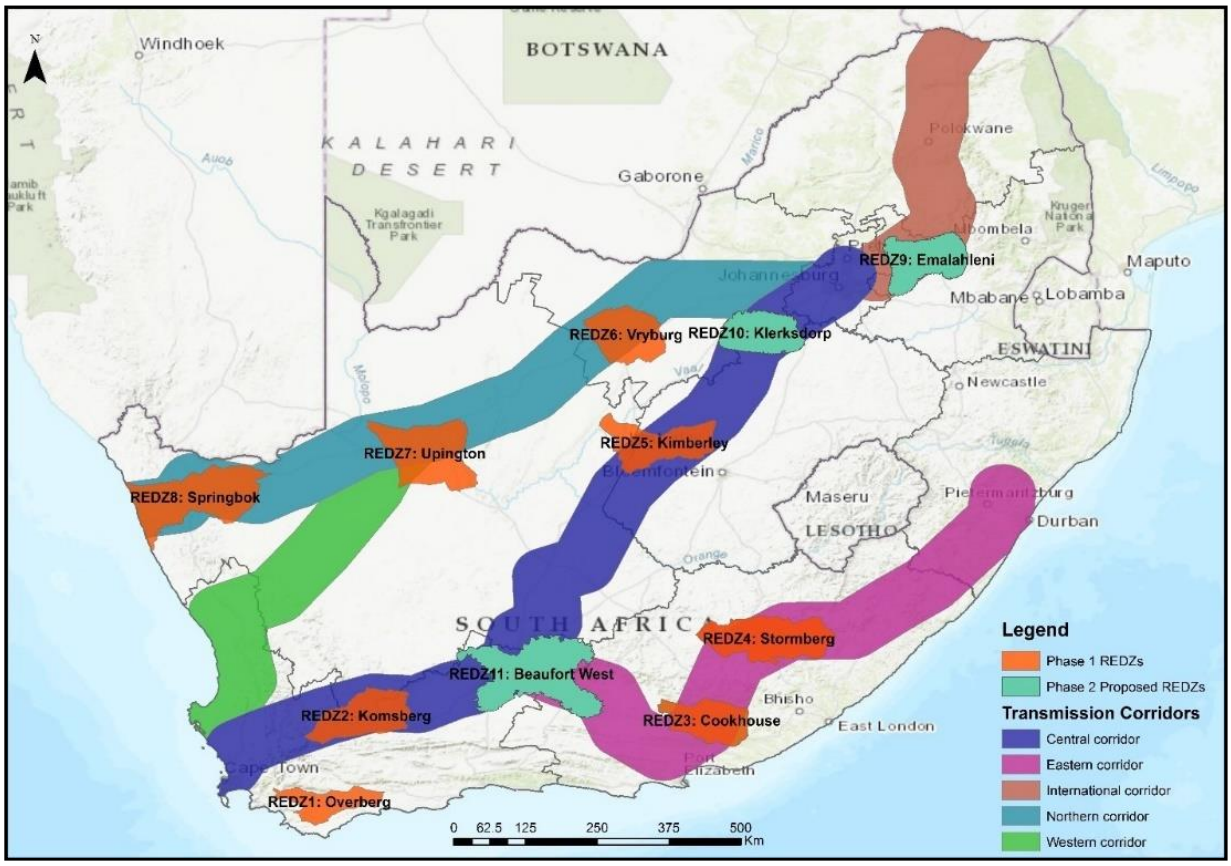


Figure 2.2: Location of Renewable Development Zones and Transmission Corridors in South Africa *(Source CSIR)*

2.4 PROVINCIAL POLICY AND PLANNING ENVIRONMENT

2.4.1 Western Cape Infrastructure Framework

The Western Cape Infrastructure Framework (WCIF)(2013) was developed by the WCP Provincial Department of Transport and Public Works in terms of the Provincial Government's mandate to coordinate provincial planning under Schedule 5A of the Constitution. The objective of the WCIF is to align the planning, delivery and management of infrastructure to the strategic agenda and vision for the Province, as outlined in the 2009-2014 Draft Provincial Strategic Plan. The One Cape 2040 and 2013 Green is Smart strategy were other key informants.

The document notes that given the status quo of infrastructure in the province, and the changing and uncertain world facing the Western Cape over the 2-3 decades a new approach to infrastructure is needed. Namely one that satisfies current needs and backlogs, maintains the existing infrastructure, and plans proactively for a desired future outcome. The 2040 vision requires a number of transitions to shift fundamentally the way in which infrastructure is provided and the type of infrastructure provided in WCP.

The WCIF addresses new infrastructure development under five major 'systems' (themes), and outlines priorities for each. Energy is one of the 'systems' identified. The document notes that a provincial demand increase of 3% per year is anticipated for the period 2012-2040. Key priorities are in matching energy generation/ sourcing with the demand needed for WCP economic growth. Additionally, the energy focus should be on lowering the provincial carbon footprint, with an emphasis on renewable and locally generated energy.

Three key transitions are identified for the WCP Energy 'system' infrastructure, namely:

- Shifting transport patterns to reduce reliance on liquid fuels.
- Promoting natural gas as a transition fuel by introducing gas processing and transport infrastructure.
- Promoting the development of renewable energy plants in the province and associated manufacturing capacity.

2.4.2 One Cape 2040 Strategy

The One Cape 2040 (2012) vision was developed by the Western Cape Government, the City of Cape Town (CoCT) and the Western Cape Economic Development Partnership. It was adopted as policy by CoCT Council in 2012. It is aimed at stimulating a transition towards a more inclusive and resilient WCP economy. It seeks to set a common direction to guide planning and action and to promote a common commitment and accountability to sustained long-term progress.

The 2040 Strategy does not replace any existing statutory plans. Rather, it is intended as a basic reference point and guide for all stakeholders planning for long-term economic resilience and inclusive growth.

Six key transitions are identified which to define the necessary infrastructure-related shifts in the WCP. One of these 6 key transitions is an Ecological transition ('Green Cape') from an unsustainable, carbon-intensive, resource use economy, to a sustainable, low carbon-footprint one. The development of renewable energy projects and natural gas are expected to significantly decrease the WCP's carbon footprint.

2.5 LOCAL LEVEL POLICY AND PLANNING

2.5.1 Beaufort West Municipality Integrated Development Plan

The vision for the BWM as set out in the IDP (2017-2022) is "Beaufort West, economic gateway in the central Karoo, where people are developed and live-in harmony together". The mission is "to reflect the will of the South African people as reflected in the Constitution and by Parliament. In so doing the municipality aims to:

- To provide excellent services to the residents of Beaufort West Municipality.
- To reduce poverty and promote the empowerment of women, youth and people living with disabilities.
- To create a crime-free, safe, and healthy environment.

The IDP lists the five Key Performance Areas, namely:

- Basic Service Delivery and Infrastructure Development (KPA 1).
- Local Economic Development (KPA2).
- Institutional Development and Municipal Transformation (KPA 3).

- Financial Viability and Management (KPA 4).
- Good Governance and Public Participation (KPA 5).

KPA 1 (Basic Service Delivery and Infrastructure Development) and KPA 2 (Local Economic Development (KPA2) are relevant to the proposed project. However, the IDP notes that the municipality does not have an LED Strategy and Implementation Plan in place.

The key challenges facing the BWM include:
- Electricity capacity constraints
- Poor maintenance of existing public facilities
- High rate of the unemployment and low household income levels.
- (Identification and implementation of more labour intensive catalytic projects)
- Sustainable Economic Growth (Speed up economic growth and transform the economy to create decent work and sustainable livelihoods, Strategy for economic growth and inclusion)

The IDP notes that the key objectives associated with KPA 2 include facilitating investment and maintenance of economic and social infrastructure to ensure infrastructure-led economic growth and development. Linked to this is the creation of an investment friendly environment to attract investment to enable growth and job creation. The proposed development has the ability to create employment and attract investment to the area.

The strategies identified to address the challenges facing the municipality include:

- Facilitate development and growth of SMME's.
- Facilitate Education and Skills Development for Cooperatives & SMME's.
- To provide SMME Support and Capacity building.

The establishment of the proposed PV SEF can assist to support these strategies. The 2017-2022 IDP was informed by a SWOT Analysis which identified a number of challenges facing the municipality of which the following are relevant to the proposed development:

- Access to technology and technological advances.
- Unable to attract skilled staff to the area.
- No formal policy on green energy.
- Rural area with low development opportunities.
- Water scarcity and high electricity costs.
- Revenue and cash constraints with high number of indigents.

The proposed development will not solve all of these challenges. However, the development can contribute towards addressing some of the challenges.

The IDP highlights the risks posed by climate change, noting that the risk is relatively high in Beaufort west Municipality as it is an arid area that has always been prone to drought situations. The sectors that are vulnerable to climate change include agriculture and tourism. In terms of renewable energy, the 2017-2022 IDP notes that innovative solutions can contribute towards growth and development of the municipality, including the introduction of solar energy. The IDP also identifies major infrastructure projects that can be implemented to develop and promote economic development in the area, including large wind and ***solar*** energy projects subject to appropriate guidelines and siting principles.

A number of community meetings were held as part of the review of the 2017-2022 IDP. The key issues identified in Ward 2 where the proposed project is located included:

- Housing project for Nelspoort, paving of roads, renovation of hall and sport fields.
- Upgrade of water supply infrastructure.
- Upgrading/fencing and provision of toilet and water at cemetery.
- Establishment of a service cecentre for pensioners.
- Upgrading of the stadium.
- Cleaning of river.
- Provision of school transport for children.

Some of these issues can inform the identification of SED allocations during the operational phase.

2.5.2 Beaufort West Municipality Spatial Development Framework

The spatial vision for the municipality set out in the 2013 Spatial Development Framework is "Wilderness tourism and transport gateway to the people, mountains and plains of the Central Karoo". The SDF notes that the implications of this vision are that the main rural economic resource outside of eco-tourism is extensive agriculture.

The growth of this resource depends on improving the carrying capacity of the land through good veld management practices. The SDF does not comment on the potential impact of renewable energy projects on the natural environment. However, it does refer to shale gas exploration and uranium mining and the need to ensure that key areas such as CBAs, conservancies and stewardship areas and visually sensitive landscapes contributing to long term heritage and tourism opportunities should be avoided. The same principles are also likely to apply to the establishment of large renewable infrastructure developments. However, as indicated above, the site is located within the Beaufort West REDZ. The SDF was prepared in 2013 and therefore pre-dates the establishment of the REDZs in 2018.

In terms of economic function, the SDF notes that Beaufort West the most important settlement in the municipality and also plays a sub-regional role serving other small towns beyond its boundaries, particularly to the west, e.g. Victoria West, Fraserburg, and Loxton. It is also a major refuelling and service stop on the N1 highway for trucks and is an important station on the national rail route between Cape Town and Gauteng.

The SDF lists five main structuring elements, namely:

- The N1 road and adjacent rail route which is the main transport and socioeconomic artery through the municipality.
- The Nuweveld mountains to the north form an impressive scenic backdrop to the municipality. This area contains large areas of significant CBAs and most of the formal and informal conservation areas in the BWM.
- The Gamka River basin which contains the settlements of Beaufort West and Merweville. This area is used for extensive small stock farming.
- The Sout River Basin to the south-east of Beaufort West which is a large area of significantly degraded land with extremely low stock carrying capacity and low concentrations of people. The proposed project is located in the South River Basin area.
- The area to the west of Murraysburg which forms an almost separate eco and social system. It is the highest, wettest, and most fertile part of the municipality where most of the small areas of intensive farming are found, particularly in the west. In the south the

landscape rises up to the Sneeuberg. It is 91kms from Graaff Reinet in the Eastern Cape and 158kms from Beaufort West. This remote location creates a significant challenge as it depends on services delivered from Beaufort West.

Figure 2.3 provides an overview of the proposed SDF concept for the BWM.

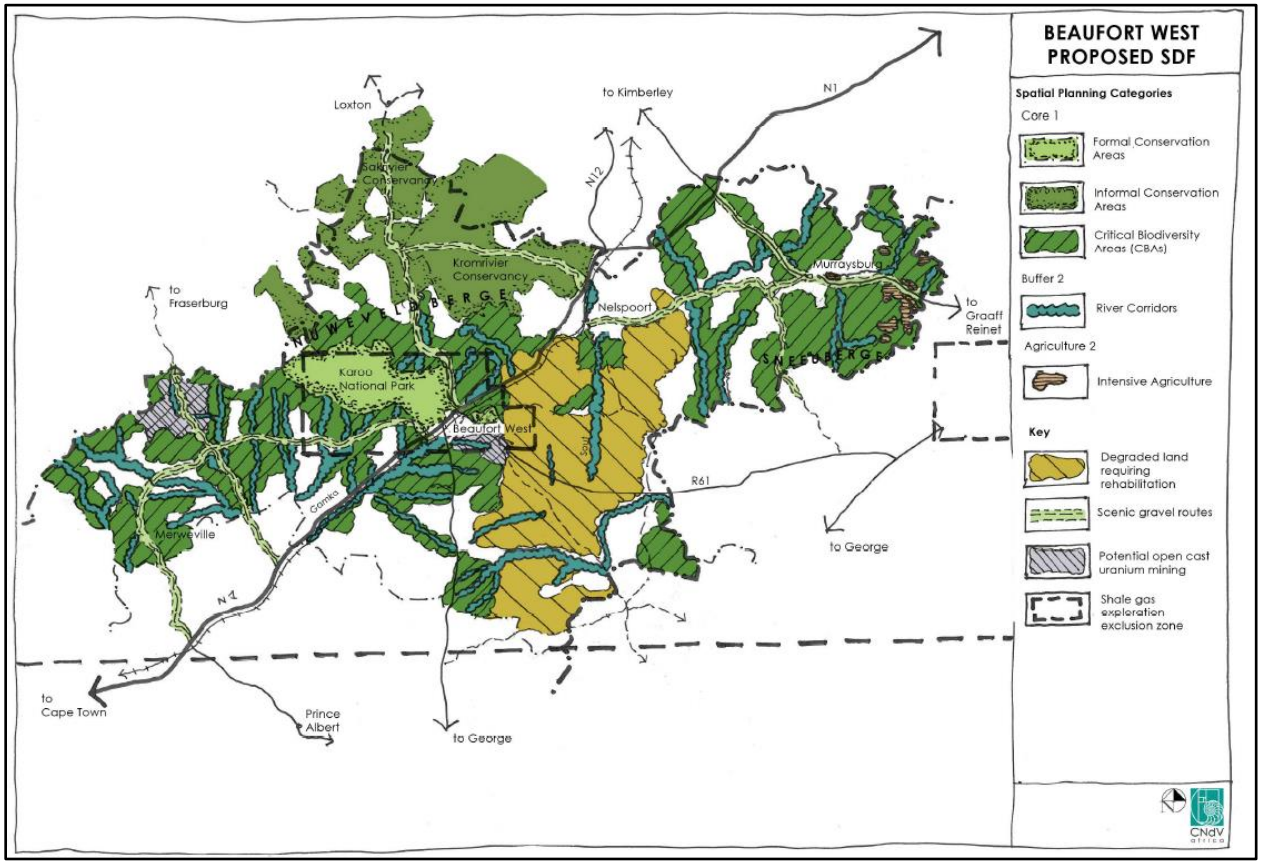


Figure 2.3: Beaufort West Municipality: Broad SDF Concept

Section 5.2.1 of the SDF lists four bio-regions that can be distinguished in terms of the natural environment and economy. Figure 2.4 illustrates the location of the bio-regions within the BWM. Table 2.1 lists the characteristics of each region, including renewable energy potential.

The bio- regions are:

- Nuweveld Highlands.
- Gamka River Basin.
- Sout River Badlands.
- Sneeuwberg Foothills.

The project is located in the Sout River Badlands, which corresponds to the Sout River Basin area (see above).

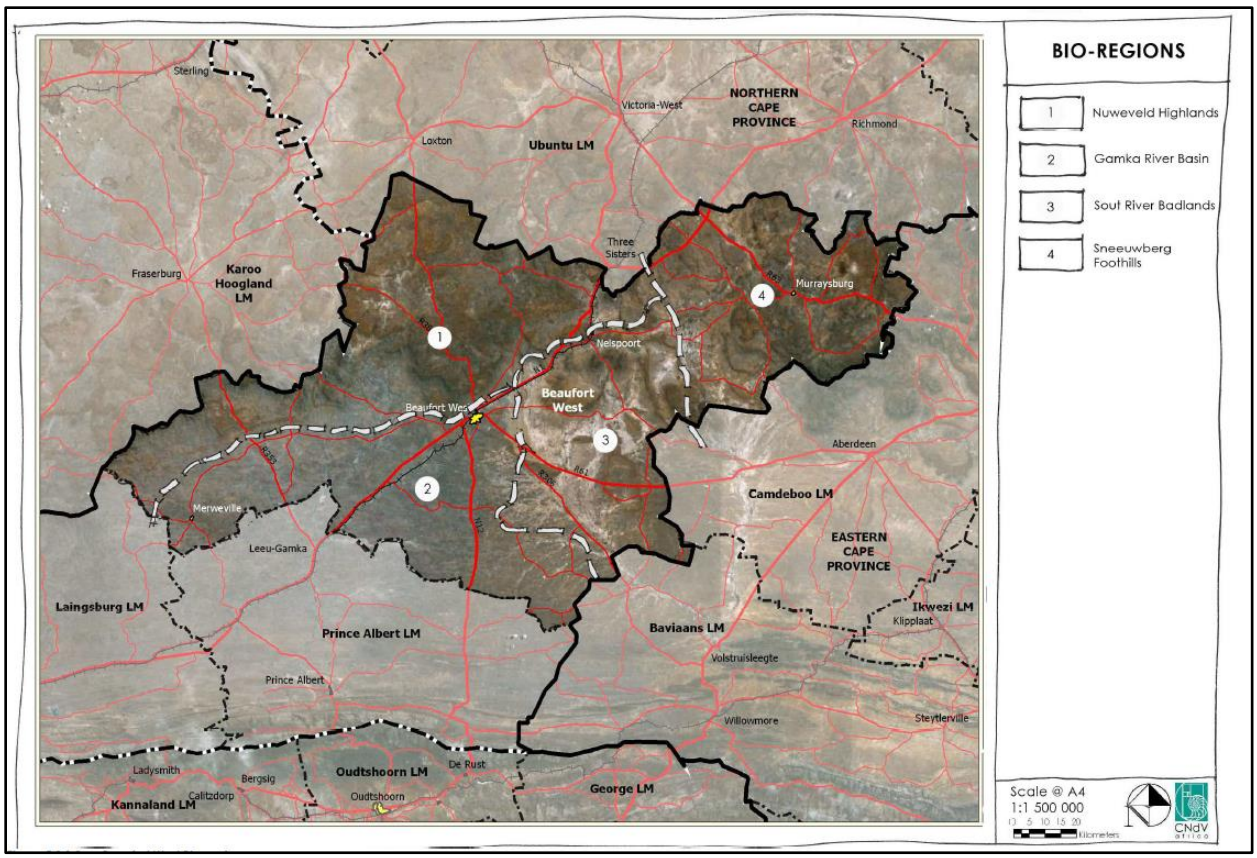


Figure 2.4: Beaufort West bio-regions

As indicated in Table 3.1, the Sout River bio-region has "fairly good solar and wind" potential. The carrying capacity of the area is low, and the landscape is described as "flat, desert like cosmic plain inkling to the south". The largest town in the region is Nelspoort, which used to be located on the N1 when it followed the rail line but this section has now been bypassed. This has left the village isolated.

Section 5.2.1, Natural Systems Synthesis, notes that the Annual Horizontal Solar Radiation is fairly high – 2000 – 2100 KWh/m2, increasing towards the north. Similarly, wind speeds of 6 – 8m/s are also fairly high. The section notes that both these sources could be potential energy generators.

Section 5.4.1.6, Wind and Solar Farm Siting Principles, lists a set of siting principles that are proposed to be used as a first set of questions to guide potential developers of wind and solar farms. The focus is largely on wind farms. However, the following are also relevant to solar farms:

- Slopes by gradient classes.
- Rocky areas.
- Soil type and permeability.
- Natural watercourses and areas with high water table, Rainfall data.
- Vegetation types and sensitivity.
- Road layout and design – slopes to be considered in road layout to reduce erosion potential of road run-off, rock-fall and landslide potential.

- Re-vegetation – steep road verges and cuts require re-vegetation to reduce sedimentation from run-off.
- Soil types and potential for erosion.
- Soil types influence on road construction and re-vegetation.
- Surface Hydrology and Groundwater. Design of roads and treatment of runoff from roads and disturbed surfaces to reduce sedimentation and eliminate erosion.

As indicated above, the proposed project is located within the Sout River bio-region The carrying capacity of the area is low, and the landscape is described as "flat, desert like cosmic plain inkling to the south". The area appears to be well suited for the establishment of PV SEFs.

Table 3.1: Characteristics of bio-regions

	Nuweveld Highlands	Gamka River Basin	Sout River Badlands	Sneeuwberg Foothills
Altitude (m)	1250-1750	750 - 1250	750 – 1250	1250 - 2000
Population distribution	Very few rural - few – isolated farmsteads and conservation areas	Beaufort W. 40 500 Merweville 1200	Nelspoort 1300	Murraysburg 4500 Rural areas – ± 1 000
Agriculture	Stock farming	Stock farming – better quality veld	Stock farming – low carrying capacity	Mainly extensive, some dryland crops– 5 000 ha Irrigation 1000 ha
Mining	Potential open cast uranium mine on R353 Shale gas exploration except Karoo National Park	Potential open cast uranium mine on R61 Shale gas exploration	Shale gas exploration	Shale gas exploration
Bio-diversity	Extensive CBAs Nama Karoo	Some CBAs Nama Karoo	Excessive degradation Nama Karoo and Dry Karoo Grassland	Extensive CBAs Nama Karoo
Tertiary	Eco and agri-tourism - hunting	Eco and agri – tourism – hunting, Transport, wholesale, retail and services – Beaufort West town	Possibly some eco-tourism - hunting	Eco and agri-tourism - hunting
Renewable energy potential	Fairly good solar Fairly good wind	Fairly good solar Fairly good wind	Fairly good solar Fairly good wind	Fairly good solar Fairly good wind
Hydrology	Source of numerous non-perennial in relatively undisturbed state	Gamka river basin with rivers in relatively undisturbed to disturbed state	Sout River in extremely disturbed state needing significant rehabilitation including many other non-perennial rivers in bio-region	Numerous perennial and non-perennial rivers in good condition
Landscape character	Classical steep mountain ranges forming impressive backdrop to whole municipality westwards from N1	Flat cosmic plains flowing to the south framed by Nuweberg to the north	Flat desert-like cosmic plain inclining to the south	Romantic landscape of rolling hills rising to the Sneeuwberg in south

SECTION 3: OVERVIEW OF THE STUDY AREA

3.1 INTRODUCTION

Section 3 provides an overview of the:

- The administrative context.
- The socio-economic context.
- The demographic context.
- The site and surrounding land uses.

3.2 ADMINISTRATIVE CONTEXT

The proposed PV SEF is located within the Beaufort West Municipality (BWM), which is one of three local municipalities that make up the Central Karoo District Municipality (CKDM), within the Western Cape Province (Figure 3.1). The main towns and settlements include Beaufort West, Murraysburg and Merweville. Beaufort West serves as the administrative centre of the BWM and CKDM. The proposed site is located in Ward 2.

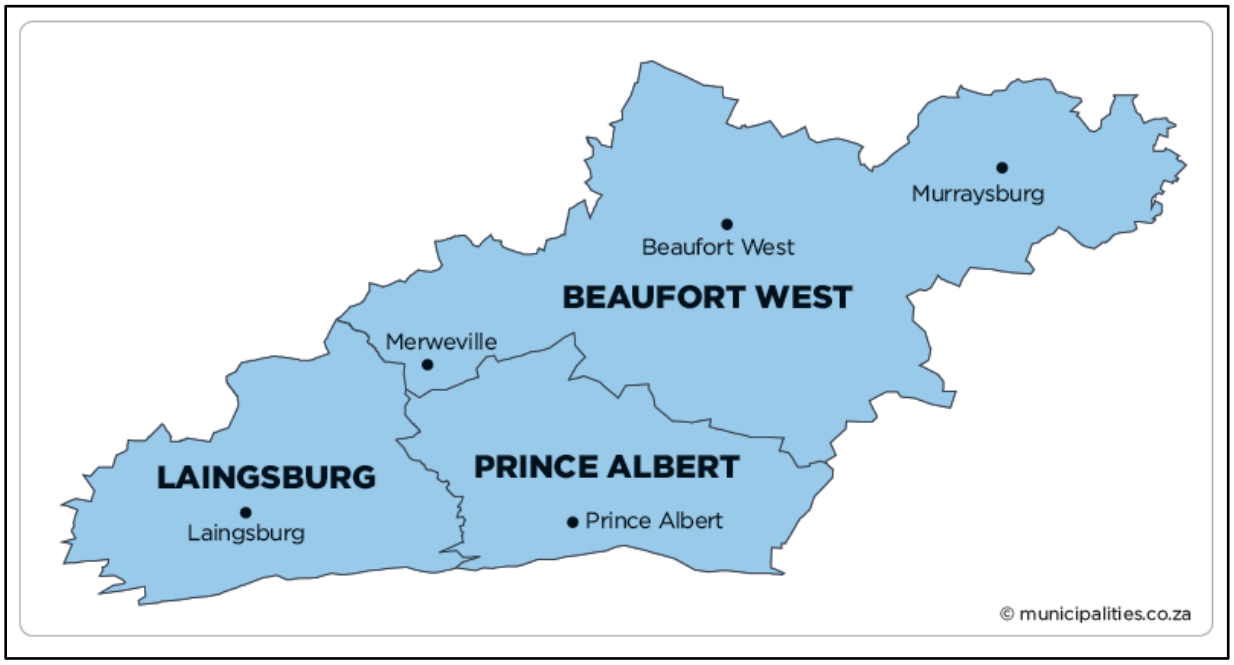


Figure 3.1: Beaufort West Municipality within Central Karoo District Municipality

3.3 DEMOGRAPHIC OVERVIEW BEAUFORT WEST MUNICIPALITY

Population

The population of the BWM in 2016 was 51 080. Of this total, 36.4% were under the age of 18, 56.7% were between 18 and 64, and the remaining 7% were 65 and older. The population of Ward 2 in 2011 was 6 975. Ward 2 is therefore a large, sparsely populated area with no large settlements. Of this total, 28.2% were under the age of 18, 64.9% were between 18 and 64, and the remaining 6.9% were 65 and older. The BWM has a relatively high percentage of people under the age of 18 and over the age of 65. This implies that a larger percentage of the population is dependent on the economically productive sector.

The dependency ratios for the BWM and Ward 2 were 76.5[5] (2016) and 54% (2011) respectively. The national dependency ratio in 2011 was 52.7%, while the Western Cape Province had the lowest provincial dependency level in South Africa, namely 45% in 2011. The municipal level is therefore significantly higher than the national and provincial level.

The dependency ratio is the ratio of non-economically active dependents (usually people younger than 15 or older than 64) to the working age population group (15-64). The higher the dependency ratio the larger the percentage of the population dependent on the economically active age group. This in turn translates reduced revenue for local authorities to meet the growing demand for services[6].

In terms of race groups, Coloureds made up 75.1% of the population on the BWM (2016), followed by Black Africans (17.7%) and Whites, 7%. In Ward 2 (2011), Coloureds made up 60.8%, followed by Whites (27%) and Black Africans (10.8%). The main first language spoken in the BWM and Ward 2 was Afrikaans (83% and 82.9% respectively), followed by isXhosa (13.1%) in the BWM and English (2.9%) in Ward 2.

Households and house types

There are a total number of 14 945 (2016) and 2 020 (2011) households in the BWM and Ward 2 respectively. Of these 99% (BWM) and 81.4% (Ward 2) were formal houses. Only 0.3% of structures in the BWM were shacks. The majority of dwellings in the BWM and Ward 2 are therefore formal structures. Approximately 39.8% of the households in the BWM and 24.2% of the households in Ward 2 were headed by women. The figures are lower than the district level, namely 40.8%, and similar to the provincial level (38%). Despite being lower than the district averages, women headed households tend to be more vulnerable and reflect a lack of employment opportunities in the area, which result in the men leaving to seek work in larger, urban areas.

[5] The traditional approach is based on people younger than 15 or older than 64. The information provided provides information for the age group under 18. The total number of people falling within this age group will therefore be higher than the 0-15 age group. However, most people between the age of 15 and 17 are not economically active (i.e. they are likely to be at school).

[6] A high dependency ratio can cause serious problems for a country if a large proportion of a government's expenditure is on health, social security & education, which are most used by the youngest and the oldest in a population. The fewer people of working age, the fewer the people who can support schools, retirement pensions, disability pensions and other assistances to the youngest and oldest members of a population, often considered the most vulnerable members of society.

Household income
Based on the data from the 2011 Census, 9.9% of the population of the BWM had no formal income, 3.3% earned less than R 4 800, 5.8% earned between R 5 000 and R 10 000 per annum, 21.6% between R 10 000 and R 20 000 per annum and 23.7% between R 20 000 and 40 000 per annum (2016). For Ward 2, 8.2% of the population had no formal income, 1.9% earned less than R 4 800, 3.1% earned between R 5 000 and R 10 000 per annum, 16.3% between R 10 000 and 20 000 per annum and 19.4% between R 20 000 and 40 000 per annum (Census 2011).

The poverty gap indicator produced by the World Bank Development Research Group measures poverty using information from household per capita income/consumption. This indicator illustrates the average shortfall of the total population from the poverty line. This measurement is used to reflect the intensity of poverty, which is based on living on less than R3 200 per month for an average sized household (~ 40 000 per annum). Based on this measure, in the region of 64.3% of the households in the BWM and 48.9% in Ward 2 live close to or below the poverty line. The current figures for both the BWM and Ward 2 are likely be higher due to impact of COVID-19 pandemic on the national, provincial, and local economy.

The low-income levels reflect the reliance on season employment in the agricultural sector and limited formal employment opportunities in the BWM. This is also reflected in the high unemployment rates. The low-income levels are a major concern given that an increasing number of individuals and households are likely to be dependent on social grants. The low-income levels also result in reduced spending in the local economy and less tax and rates revenue for the BWM. This in turn impacts on the ability of the BWM to maintain and provide services.

Employment
The official unemployment rate in the BWM in 2016 was 12.2%, while 44.1% were regarded as not economically active and 8.3% were discouraged work seekers. The figures for Ward 2 in 2011 were 6.2% and 37.1% respectively. These figures are significantly lower than the official unemployment 2011 rates for the Western Cape Province (21.6%) and National (29.8%). These lower rates do not however reflect seasonal unemployment which represents a significant challenge in the agricultural sector in the area.

The 2020 Socio-economic profile of the BWM prepared by the Provincial Government notes that the BWM (24.2%) had the highest unemployment area in the CKDM (22%) in 2019. The rate was also higher than the provincial rate (19.4%). The report notes that the high unemployment rate is particularly concerning given that this estimate is based on the narrow definition of unemployment i.e. the percentage of people that are able to work, but unable to find employment. In turn, the broad definition generally refers to people that are able to work, but not actively seeking employment. The current unemployment rates are likely be higher due to impact of COVID-19 pandemic on the national, provincial, and local economy.

Education
In terms of education levels, the percentage of the population over 20 years of age in the BWM and Ward 2 with no schooling was 5.5% (2016) and 6.8% (2011) respectively, compared to 2.4% for the Western Cape (2016). The percentage of the population over the age of 20 with matric was 32.3% and 28.3% respectively, compared to 35.2% for the Western Cape. The education levels in the BWM and Ward 2 are therefore marginally lower than the provincial levels. This reflects the rural nature of the area and the highlights the vulnerability of the local communities in these areas.

3.4 MUNICIPAL SERVICE LEVELS BEAUFORT WEST MUNICIPALITY

Access to water
Based on the 2016 Household Community Survey, 78.4% of households in the BWM have piped water inside their houses, while 17.7% relied on piped water in their yards. Based on the 2011 Census, 58.1% of households in Ward 2 were provided water by a service provider and 36.6% relied on boreholes. The figures for Ward 2 reflect the rural nature of the area. In addition, due to the rural, dispersed nature of the area, it is both difficult and costly to provide municipal services, hence the reliance on boreholes.

Sanitation
98% of the households in the BWM had flush toilets, while only 0.3% had no access to sanitation facilities. In Ward 2, 82.4% of households had flush toilets and 7.5% had no access to sanitation facilities.

Refuse collection
94.9% of the households in the BWM had their waste collected by a service provider on a regular basis, while 3% relied on their own dump. In Ward 2, 61% had their waste collected by a service provider on a regular basis and 30.3% relied on their own dump. The figures for Ward 2 reflect the rural nature of the area. In addition, due to the rural, dispersed nature of the area, it is both difficult and costly to provide municipal services, hence the reliance on their own dump.

3.5 SOCIO-ECONOMIC OVERVIEW BEAUFORT WEST MUNICIPALITY[7]

In 2018 the economy of the Beaufort West municipal area was valued at R2.2 billion (current prices) and employed 12 515 people. Historical trends between 2014 and 2018 indicate that the municipal area realised an average annual growth rate of 0.6%. While growth within the primary sector remained relatively stagnant between 2014 and 2018 (0.1%), the secondary and tertiary sectors grew at 0.4 and 0.8 % respectively. The economy is overall expected to contract by 1.1% in 2019. Like the rest of South Africa, economic growth in 2020 and 2021 will be negatively impacted by COVID 19. This is expected to affect each of the key economic sectors.

In terms of sectoral contributions, general government (R475.5million), transport, storage, and communication (R369.8million) and the wholesale and retail trade, catering, and accommodation (R329.3million) sectors were the main contributors to growth in the municipal area.

The latter two sectors are however both expected to contract in2019 (0.6 and 0.1 % respectively). Although the agriculture, forestry and fishing sector contributed a significant number of additional jobs in the CKD between 2014 and 2018 (47jobs), it is estimated that this sector suffered the largest GDPR contraction (8.7percent) in2019. The contribution in terms of generating new employment opportunities will therefore be limited

[7] Based on 2020 Socio-economic Profile: Beaufort West Municipality, prepared by the Western Cape Government

3.6 OVERVIEW OF STUDY AREA

3.6.1 Introduction

The proposed development area is located in the Beaufort West Local Municipality (BWLM) of the Western Cape Province, approximately 65 km east of the town of Beaufort West. The BWLM is one of three Local Municipalities that make up the Central Karoo District Municipality (CKDM). The administrative seat of the BWLM and CKDM is Beaufort West. The town of Beaufort West, founded in 1818 on the farm Hooyvlakte at the request of the governor at the Cape, Lord Charles Somerset, was the first town to be established in the central Karoo. The town was initially named Beaufort after Henry Somerset, 5th Duke of Beaufort, who was the father of Lord Charles Henry Somerset, then governor of the Cape Colony. The town was renamed Beaufort West in 1869 to avoid confusion with Port Beaufort in the Western Cape as well as Fort Beaufort in the Eastern Cape (Wikipedia). The town and the surrounding area prospered following the introduction of Saxon Merino sheep by John Molteno, a young Anglo-Italian immigrant to South Africa. Beaufort West became the first municipality in South Africa on 3 February 1837 and had the country's first town hall. When the railroad reached the town in 1880 it became a marshalling yard and locomotive depot and today it is the largest town in the Karoo (Wikipedia).

Beaufort West is located near the headwaters of the Gamka River (a tributary of the Gourits River). The confluences of a number of Gamka tributaries – viz. the Kuils-, Hans- and Droeë Rivers – are located to the south of the town. While flow is seasonal, snowmelt from the Nuweveldberge and a number of fountains historically provided year-round water to the town and some adjacent farms. The town currently draws its water supply from a number of dams and boreholes associated with the Gamka system. These are located on municipal and privately-owned farms. The relative importance of groundwater sources has increased significantly during the current drought.

The area is arid the vegetation consists of low-growing karroid scrub, in some places complimented by grasses. Trees and large shrubs are restricted to ephemeral drainage lines and water courses. The natural grazing pattern historically favoured rainfall-induced migratory use (by plains game) over sedentary use. The region is historically a stock farming area. Sheep farming is still the dominant activity, supplemented by (angora) goats and, to a lesser extent, cattle. This is linked to low veld carrying capacities and limited habitat diversity, lack of cover and perennial water sources. Game is also farmed on a number of farms in the area.

Apart from stock farming, Beaufort West's economy is underpinned by its strategic location on the N1. Located more or less midway between Cape Town and Bloemfontein, Beaufort-West is a well-known sleep-over location for travellers on the route. The town offers a number of refuelling and repair facilities to trucks and passenger vehicles. A number of logistics operations are also based in town. Smaller shops – e.g., convenience stores and fast-food outlets – benefit from the passing trade.

The tourist accommodation sector is largely based on passing (as opposed to dedicated) visitor flows associated with the N1 route. Many guest farms around Beaufort West also offer seasonal hunting opportunities on a limited scale. Dedicated tourism is mainly associated with the Karoo National Park (NP) located to the north-west of Beaufort West. The Karoo NP is located ~ 80 km to west of the development area.

Other key roads in the study area include the N12 ('Oudshoorn Road') and the R61 ('Aberdeen Road'). The N12, which links up with Oudshoon and George, intersects with the N1 ~2.7 km west of Beaufort West (Photograph 3.1). The R61 located approximately 36 km to the south of the site intersects with the N1 in Beaufort West (as Voortrekker Street) (Photograph 3.2) and provides a link to Aberdeen and Graaff-Reinet located to the east in the Eastern Cape Province. The R61 is a key taxi route between the Western and Eastern Cape Provinces and Beaufort West is an important stop on the route (Photograph 3.2). Traffic volumes peak over holiday periods, especially Easter weekend and Christmas season.

Photograph 3.1: Intersection of the N12 with the N1 ~3 km north of Eskom's Droeërivier MTS

Photograph 3.2: Voortrekker St/ R61 ('Aberdeen Road') from the eastern outskirts of Beaufort West

Photograph 3.3: Looking south-east down the R61

Eskom's Droeërivier Main Transfer Station (MTS) is located along the N12 ~3.8 km to the south-west of the Beaufort West built edge. Nine lines (400 kV and 132 kV) currently feed into the MTS from the west, south and east, while a tenth (765 kV) is aligned just to the north of the MTS. Five of the lines are located in two broad corridors located within 2.5 south of the built edge of Beaufort West (Photograph 3.4 and 3.5).

Photograph 3.4: Eskom's Droeërivier MTS, seen from the north from along the N12

Two smaller substations are substations are located on the eastern outskirts of Beaufort West, namely along the N1, and near the intersection of the R61 and the Hopewell gravel road (Photograph 3.5). Two 132 kV lines (actually in- and out-feeding aspects of the same single line) are associated with both substations. The southern and south-eastern approaches to Beaufort West are therefore exposed to five major lines and two existing substations (Photograph 3.6). The relevant area is not considered of great scenic significance. This is largely linked to the largely flat and featureless landscape.

Photograph 3.5: Eskom substation located along the Hopewell Road

Photograph 3.6: Existing 2 x 400 kV line corridor traversing the R61 approximately 5.6 km south-east of Beaufort West

The town of Murraysburg, also located within the BWLM, is located approximately 40 north east of the site (Photograph 3.7). The town was founded in 1856 on a farm named Eenzaamheid (Dutch for "loneliness") and became a municipality in July 1883. The town was named after the Reverend Andrew Murray, the then DRC minister of Graaff-Reinet, and Barend O J Burger, who played a key role in the purchase of the farm Eenzaamheid and the future establishment of the town. The history of the town dates back to the latter part of the 18th century when roaming stock farmers settled in the Sneeuberg region, which fell outside any of the then existing districts of the Cape. This led to the establishment of the town of Graaff-Reinet in 1786. Murraysburg area fell within the district. When the congregation of Richmond was formed in 1843 a large portion of the Murraysburg district formed part of the new congregation. However, due to the large distance between Richmond and Graaff-Reinet

the local farmers in the area indicated that there was a need for a new town. As a result the farm Eenzaamhied was bought from Mr Kootjie Burger and the town of Murraysburg was established (Malherbe, Conradie and Pienaar, Murraysburg 150 years, 2011).

Murraysburg is situated on the R63 regional road, which links the town with the N1 to the west (~ 42km) and the town of Graaf Reinet to the east (~ 90km). The dominant land use in the study area is farming, specifically sheep, Angora goat and game farming (Photograph 1.2). Small scale irrigation linked to the production of lucerne for feedstock also takes place on farms located adjacent to rivers in the area. The small settlement of Nelspoort, with a population of 1700, is the nearest built-up area/town to the site. The settlement is located ~50 km north east of Beaufort West and 5km south east of the N1.

Photograph 3.7: Church in Murraysburg

3.6.2 Overview of the project area[8]

The Visual Impact Assessment (VIA, Nuleaf, 2022) notes that the study area is located approximately 15km south-east Nelspoort and 60km north-east of Beaufort West within the Central Karoo District Municipality in the Western Cape Province. The Project site is located within the Beaufort West Renewable Energy Development Zone ("REDZ 11") and the Central Transmission Corridor.

The the study area is located on flat high lying land with hills to the north and south where the elevation ranges from 1120 m above sea level (a.s.l) on the site itself to1520 a.s.l for the Bruinrug and Vaalkoppe to the north and south respectively (Photograph 3.8). The land cover

[8] The description of the project area is based on the information contained in the Visual Impact Assessment (VIA) (Nuleaf, 2022).

consists predominately of shrubland and bare rock and soil. Small areas of dryland agriculture and exotic plantations are present. The study area is located predominately within the Nama Karoo biome, with rainfall ranging from 123 mm -248 mm per annum. The vegetation type is classified as Gamka Karoo which is a low-lying vegetation type with small portions of Southern Karoo Riviere. The majority of the study area is sparsely populated and consists of a landscape of wide-open expanses and extreme isolation (Photograph 3.9 and 3.10). The scarcity of water and other natural resources has influenced settlement within this region, keeping numbers low, and distribution limited to the availability of permanent water. Settlements, where they occur, are usually rural homesteads and farmsteads. Access to the study area is via secondary roads which link with one another, providing access to farmsteads.

Source: VIA, Nuleaf 2022

Photograph 3.8: Bruinrug Mountain located north of the site

Source: VIA, Nuleaf 2022

Photograph 3.9: Area where the OHL will cross the existing Droerivier/Hyra 1&3 400 kV OHL before connecting to substation B

Source: VIA, Nuleaf 2022

Photograph 3.10: Area to the east of the access road where the OHL line traverse

Nelspoort, with a population of 1700, is the nearest built-up area/town to the site (Photograph 3.11). Other infrastructure within the study area includes the Gamma/Kappa 1 765 kV, Droerivier/Hydra 2 400 kV and Droerivier/Hydra 1 & 3 400 kV overhead power line, the Riem Traction substation and a freight railway line. The railway line traverses the study area from the west to the north and lies north west of the proposed Belvedere SEF, while the powerlines traverse the study area from the south west to the north and transects the study area.

The VIA notes that there here are no formal protected or conservation areas or major tourist attractions /resorts present within the study area. The greater environment has a largely natural and undeveloped character. In terms of visual quality of the receiving environment within the study area, the VIA states that it is high by virtue of the vast and undeveloped nature of the environment. This lends a distinct sense of place to the area. However, the VIA notes that the landscape is not unique.

Photograph 3.11: Nelspoort, the nearest town to the proposed site

3.6.3 Overview of site and adjacent properties

Existing Eskom lines in the study area are limited to two corridors (2 lines each) located just to the east of Nelspoort, and near-parallel in alignment to each other and the N1. The project Substation Alternative A site is proposed immediately to the east of the western corridor (1 x 765 kV + 1 x 400 kV), while Alt B is proposed immediately to the east of the eastern corridor (2 x 400 kV). The Collector Substation (CS) is proposed approximately 9 km (linear) to the south-east of the 2 x 400 kV corridor.

The project straddles two properties, namely Belvedere 73/1 and Belvedere 73/2 (Hamelkuil). Belvedere 73/1 (4 101 ha) is owned by Mr Gideon Vivier, and Belvedere 73/2 (4 301 ha) by Messrs Herhold (3 brothers, Kruidfontein Trust) (Figure 3.2).

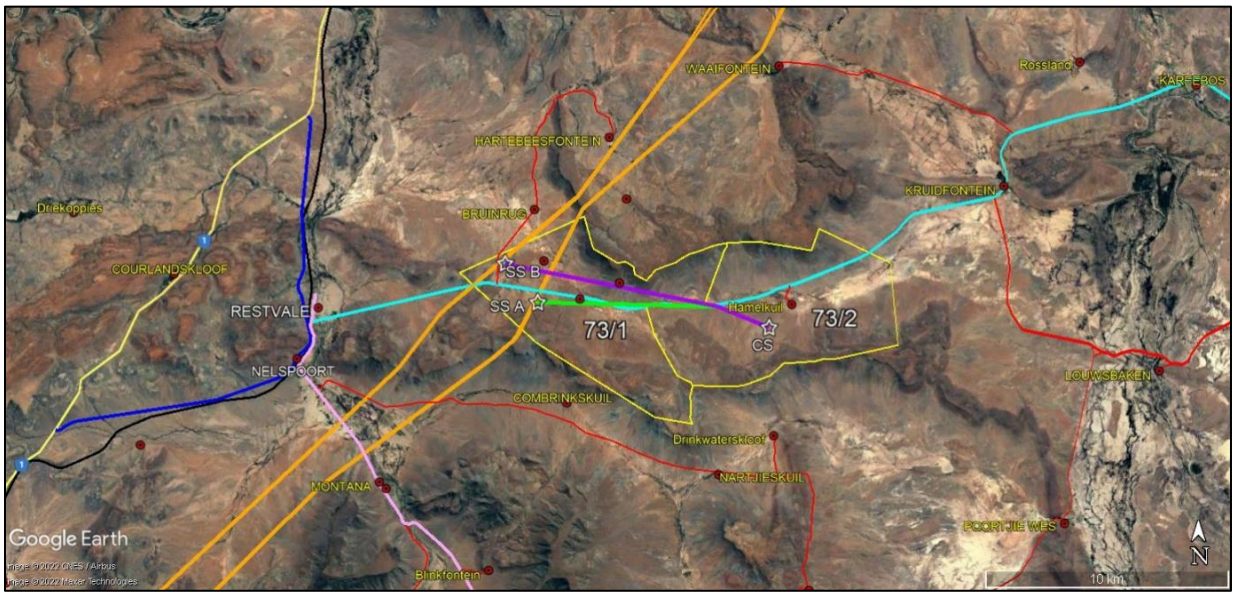


Figure 3.2: Proposed Poortjie West PV Cluster substation alternatives, Collector Substation, and Tx line Alt A (green) and Tx line Alt B (purple) in relation to site properties (yellow) and local context; existing Eskom transmission lines (orange) and study area road network, namely N1-Nelspoort tar road (dark blue), Nelspoort-Murraysburg tar road (light blue), Hopewell gravel road (light pink) and other local roads (red)

Mr Vivier is based on a farm located along the N1 corridor, approximately 30 km to the south west of the site. Mr Vivier's study area properties (which includes adjacent Montana 123/1 'Combrinkskuil') are used primarily for grazing (sheep), but also accommodate commercial biltong hunting during the winter months.[9] Only farming structures (shaving sheds, etc) are located on Belvedere 73/1. One caretaker labourer permanently resides on Combrinkskuil. No other dedicated labour is associated with the relevant properties (Vivier, pers. comm). The Nelspoort-Murraysburg tar road traverse Belvedere 73/1. Combrinkskuil is accessed via Belvedere 73/1. The Montana 3 PV SEF is currently proposed on a 440-ha portion of Belvedere 73/1. Both existing Eskom corridors affect the westernmost portion of Belvedere 73/1.

Belvedere 73/2 (Hamelkuil) forms part of a larger farming operation based on adjacent Kruidfontein 161/RE (Kruidfontein). The properties are used exclusively for grazing (sheep). Fodder cropping for own use on Kruidfontein has been abandoned due to the lack of water. The farming operation employs members 9 labourer households. The owners do not reside in the study area. A farm manager lives on Kruidfontein. The labourers' houses are located near the farmstead on Kruidfontein. Only farming structures (old kraal) are located on Hamelkuil

[9] Groups of supervised private hunters paying to hunt for own use of carcasses, i.e., not trophy hunting or for the venison trade. A large herd of over 1000 Springbuck ranges on Belvedere 73/1 and Combrinkskuil. A camp system has been set up to drive the herd or portions thereof into designated hunting areas on the properties prior to hunts (Vivier, pers. comm).

(Herhold, pers. comm). Both Hamelkuil and Kruidfontein are traversed by the Nelspoort-Murraysburg tar road. Neither property is currently affected by Eskom lines.

3.6.4 Potential social receptors

Very few social receptors are located in close proximity to the project. The nearest tourist accommodation facilities are located on the Vale and Renosterkop along the N1, approximately 27 km south-west of the site. Only the farmstead on Bruinrug (64) is located within relative close proximity to the site (viz. 2.4 km of the nearest line Alternative, Alt B) (Figure 3.3). The findings of the Visual Impact Assessment indicate that a very high visual impact is associated with the Nelspoort-Murraysburg tar road (traversed by both Tx line alternatives) and two of the structures on Belvedere 73/1. A high impact is associated with the structure on Hamelkuil (73/2), and a moderate impact on the farmstead on Bruinrug (LOGIS/ Nuleaf, 2022)[10]. As indicated, the structures on the site properties 73/1 and 73/2 are farm buildings (sheds, kraals) and are not inhabited.

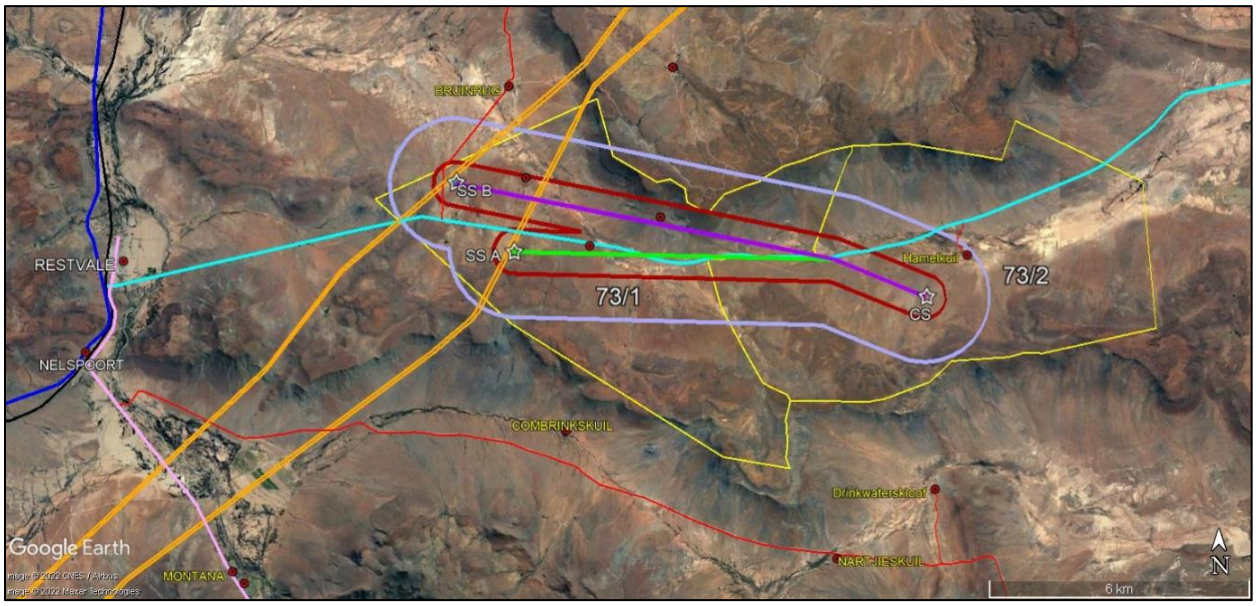


Figure 3.3: Proposed Poortjies Wes PV Cluster substation alternatives, Collector Substation, and Tx line Alt A (green) and Tx line Alt B (purple) in relation to site properties (yellow) existing Eskom transmission lines (orange) and study area road network, namely N1-Nelspoort tar road (dark blue), Nelspoort-Murraysburg tar road (light blue), Hopewell gravel road (light pink) and other local roads (red). Dark grey outline indicates 1.5 km distance from Tx line Alts; dark red 500 m[11].

Footprint impacts associated with the substation sites are limited. All the substation sites would affect small portions of large properties. The sites would occupy natural veld used

[10] The Visual Impact Index (VIA) is based on a combination of factors, including distance, exposure/ topography, and viewer frequency/ incidence. Very high visual impacts (weighted) are contained within 500 m of the project, high ones 500 m - 1.5 km, moderate ones between 1.5 km and 3 km, and low ones beyond 3 km (LOGIS/Nuleaf, 2022: 23).

[11] Distance outlines based on Visual Impact Index map (Map 5) contained in the project VIA Report (LOGIS/ Nuleaf, 2022).

exclusively for grazing to the north and east of the Nelspoort-Murraysburg tar road. Transmission line Alternative B (approximately 11.1 km) is slightly longer than Alternative A (9.6 km). The owners of Hamelkuil (73/2) have indicated that the Collector Substation site and both transmission line alternatives were acceptable (Herhold, pers. comm). The owner of Belvedere 73/1 has indicated that Alternative A was acceptable as most of the alignment was contained along the Nelspoort-Murraysburg road. Alternative B was not regarded as suitable as it would impact on a portion of the property best suited for seasonal commercial hunting. Potential impacts are related to sense of place/ visual, potential safety restrictions. This would compromise the best hunting area on the property, and potentially compromise the camp infrastructure specifically set up to make use of it. This is pertinent, as another portion of the property would be sterilized to hunting, should the proposed Montana PV 3 facility be constructed (see below) (Vivier, pers. comm).

Project site access would be directly off the Nelspoort-Murraysburg road. The road functions as a spine in the study area, i.e., many properties are primarily accessed directly or indirectly off the road. Many properties are accessible via alternative roads, but only via often considerable detours. The road is currently traversed by 2 Eskom corridor crossings at the western terminus of the project site, i.e., the substation Alts. The area to the east of the lines is currently unaffected by similar infrastructure.

Five REFs are currently proposed in the immediate study area, viz. the Montana 1-3 PV and Brakpan 1 PV SEFs, and the Dorst Vlakte WEF. As indicated, the Montana 3 PV SEF is currently proposed on one of the site properties, Belvedere 73/1. The proposed site, located approximately 570 m south of the Nelspoort-Murraysburg road, would occupy approximately 440 ha of the property.

SECTION 4: ASSESSMENT OF SOCIAL ISSUES

4.1 INTRODUCTION

Section 4 provides an assessment of the key social issues identified during the study. The identification of key issues was based on:

- Review of project related information, including other specialist studies.
- Interviews with key interested and affected parties.
- Experience/ familiarity of the author with the area and local conditions.
- Experience with similar projects.

The assessment section is divided into the following sections:

- Assessment of compatibility with relevant policy and planning context ("planning fit".
- Assessment of social issues associated with the construction phase.
- Assessment of social issues associated with the operational phase.
- Assessment of social issues associated with the decommissioning phase.
- Assessment of the "no development" alternative.
- Assessment of cumulative impacts.

4.2 ASSESMENT OF POLICY AND PLANNING FIT

The findings of the review indicate that renewable energy is strongly supported at a national, provincial, and local level. At a national level the development of and investment in renewable energy is supported by the National Development Plan (NDP), New Growth Path Framework and National Infrastructure Plan, which all refer to renewable energy. Renewable energy is also supported at a provincial and local municipal level. The proposed site is also located within the Beaufort West REDZ. The area has therefore been identified as suitable for the establishment of large-scale solar energy facilities and associated infrastructure. The BWM IDP and SDF also support the development of renewable energy.

4.3 CONSTRUCTION PHASE SOCIAL IMPACTS

The key social issues associated with the construction phase are the following:

Potential positive impacts

- Creation of employment and business opportunities.

Potential negative impacts

- Impacts associated with the presence of construction workers on local communities.
- Impact on local farmers and farming operations.
- Noise, dust, and safety impacts of construction related activities and vehicles.
- Increased risk of grass fires associated with construction related activities.

- Noise, dust, and safety impacts associated with construction related activities and vehicles.
- Impact on productive farmland.

4.3.1 Creation of local employment, training, and business opportunities

Based on similar projects the construction phase of for the grid connection will extend over a period of approximately 3-6 months and create in the region of 30-40 employment opportunities. Approximately 80% of the jobs will be low-skilled, 15% semi-skilled and 5% skilled. Most of the low and semi-skilled employment opportunities would benefit community members from local towns in the area, specifically Beaufort West. A percentage of the high skilled positions may also benefit the local community. Most of the employment opportunities are also likely to accrue to Historically Disadvantaged (HD) members from these local communities. Given high local unemployment levels and limited job opportunities in the area, this will represent a localised, social benefit. The remainder of the skilled employment opportunities are likely to be associated with the contactors appointed to construct the grid infrastructure. However, in the absence of specific commitments from the developer to maximise local employment targets the potential opportunities for local employment will be limited. The proponent should therefore commit to employing as many local community members as possible.

The total wage bill will be in the region of R 1.5 million (2021 Rand values). This is based on assumption of R 8 000 per month for low skilled workers, R 12 000 per month for semi-skilled workers and R 25 000 per month for high skilled workers over 4 months. A percentage of the wage bill will be spent in the local economy which will also create opportunities for local businesses in BWM. The capital expenditure associated with the construction of grid infrastructure will be ~ R 15-20 million and will create opportunities for local companies and the regional and local economy. Implementing the enhancement measures listed below can enhance these opportunities. The sector of the local economy that is most likely to benefit from the proposed development is the local service industry. The potential opportunities for the local service sector would be linked to accommodation, catering, cleaning, transport, and security, etc. associated with the construction workers on the site. However, given the relatively small scale of the project and short duration of the construction phase these benefits will be limited.

Table 4.1: Impact assessment of employment and business creation opportunities during the construction phase

Nature: Creation of employment and business opportunities during the construction phase		
	Without Enhancement	**With Enhancement**
Extent	Local-Regional (2)	Local – Regional (2)
Duration	Short term (2)	Short term (2)
Magnitude	Low (4)	Low (4)
Probability	Probable (3)	Highly probable (4)
Significance	Low (24)	Medium (32)
Status	Positive	Positive
Reversibility	N/A	N/A
Irreplaceable loss of resources?	N/A	N/A
Can impact be enhanced?	Yes	
Enhancement: See below		
Residual impacts: Improved pool of skills and experience in the local area.		

Assessment of No-Go option

There is no impact, as the current status quo will be maintained.

Recommended enhancement measures
In order to enhance local employment and business opportunities associated with the construction phase the following measures should be implemented:

Employment
- Preparation and implementation of a Stakeholder Engagement Plan (SEP) prior to and during the construction phase.
- Where reasonable and practical, the proponent should appoint local contractors and implement a 'locals first' policy, especially for semi and low-skilled job categories. However, due to the low skills levels in the area, the majority of skilled posts are likely to be filled by people from outside the area.
- Where feasible, efforts should be made to employ local contactors that are compliant with Broad Based Black Economic Empowerment (BBBEE) criteria.
- Before the construction phase commences the proponent should meet with representatives from the BWM to establish the existence of a skills database for the area. If such as database exists, it should be made available to the contractors appointed for the construction phase.
- The local authorities, community representatives, and organisations on the interested and affected party database should be informed of the final decision regarding the project and the potential job opportunities for locals and the employment procedures that the proponent intends following for the construction phase of the project.
- Where feasible, training and skills development programmes for locals should be initiated prior to the initiation of the construction phase.

- The recruitment selection process should seek to promote gender equality and the employment of women wherever possible.

Business

- The proponent should liaise with the BWM with regards the establishment of a database of local companies, specifically BBBEE companies, which qualify as potential service providers (e.g. construction companies, catering companies, waste collection companies, security companies etc.) prior to the commencement of the tender process for construction contractors. These companies should be notified of the tender process and invited to bid for project-related work.
- Where possible, the proponent should assist local BBBEE companies to complete and submit the required tender forms and associated information.
- The BWM, in conjunction with the local business sector and representatives from the local hospitality industry, should identify strategies aimed at maximising the potential benefits associated with the project.

Note that while preference to local employees and companies is recommended, it is recognised that a competitive tender process may not guarantee the employment of local labour for the construction phase.

4.3.2 Impact of construction workers on local communities

The presence of construction workers can pose a potential risk to family structures and social networks. While the presence of construction workers does not in itself constitute a social impact, the manner in which construction workers conduct themselves can impact on local communities. The most significant negative impact is associated with the disruption of existing family structures and social networks. This risk is linked to potentially risky behaviour, mainly of male construction workers, including:

- An increase in alcohol and drug use.
- An increase in crime levels.
- The loss of girlfriends and/or wives to construction workers.
- An increase in teenage and unwanted pregnancies.
- An increase in prostitution.
- An increase in sexually transmitted diseases (STDs), including HIV.

Given the relatively small number of construction workers, namely ~ 30-40, the potential impact on the local community is likely to be negligible.

Table 4.2: Assessment of impact of the presence of construction workers in the area on local communities

Nature: Potential impacts on family structures and social networks associated with the presence of construction workers		
	Without Mitigation	**With Mitigation**
Extent	Local (2)	Local (1)
Duration	Short term (2)	Short term (2)
Magnitude	Minor (2)	Minor (2)
Probability	Highly Probable (4)	Highly Probable (4)
Significance	Low (24)	Low (20)
Status	Negative	Negative
Reversibility	No in case of HIV and AIDS	No in case of HIV and AIDS
Irreplaceable loss of resources?	Yes, if people contract HIV/AIDS. Human capital plays a critical role in communities that rely on farming for their livelihoods	Yes, if people contract HIV/AIDS. Human capital plays a critical role in communities that rely on farming for their livelihoods
Can impact be mitigated?	Yes, to some degree. However, the risk cannot be eliminated	
Mitigation: See below		
Residual impacts: Impacts on family and community relations that may, in some cases, persist for a long period of time. Also, in cases where unplanned / unwanted pregnancies occur or members of the community are infected by an STD, specifically HIV and or AIDS, the impacts may be permanent and have long term to permanent cumulative impacts on the affected individuals and/or their families and the community.		

Assessment of No-Go option
There is no impact as the current status quo would be maintained.

Recommended mitigation measures
The potential risks associated with construction workers can be mitigated. The detailed mitigation measures should be outlined in the Environmental Management Plan (EMP) for the Construction Phase. Aspects that should be covered include:

- Preparation and implementation of a Stakeholder Engagement Plan (SEP) prior to and during the construction phase.
- Preparation and implementation of a Community Health, Safety and Security Plan (CHSSP) prior to and during the construction phase.
- The SEP and CHSSP should include a Grievance Mechanism that enables stakeholders to report resolve incidents.
- Where possible, the proponent should make it a requirement for contractors to implement a 'locals first' policy for construction jobs, specifically for semi and low-skilled job categories.
- The proponent should consider the option of establishing a Monitoring Forum (MF) in order to monitor the construction phase and the implementation of the recommended mitigation

measures. The MF should be established before the construction phase commences, and should include key stakeholders, including representatives from local communities, local BWM Councillor, farmers, and the contractor(s). The MF should also be briefed on the potential risks to the local community associated with construction workers.

- The proponent and the contractor(s) should, in consultation with representatives from the MF, develop a code of conduct for the construction phase. The code should identify which types of behaviour and activities are not acceptable. Construction workers in breach of the code should be dismissed. All dismissals must comply with the South African labour legislation.
- The proponent and the contractor should implement an HIV/AIDS and COVID-19 awareness programme for all construction workers at the outset of the construction phase.
- The construction area should be fenced off before construction commences and no workers should be permitted to leave the fenced off area.
- The contractor should provide transport for workers to and from the site on a daily basis. This will enable the contactor to effectively manage and monitor the movement of construction workers on and off the site.
- Where necessary, the contractors should make the necessary arrangements to enable low and semi-skilled workers from outside the area to return home over weekends and/ or on a regular basis. This would reduce the risk posed to local family structures and social networks.
- The contractor must ensure that all construction workers from outside the area are transported back to their place of residence within 2 days for their contract coming to an end.
- It is recommended that no construction workers, with the exception of security personnel, should be permitted to stay over-night on the site.

4.3.3 Risk to safety, livestock, and farm infrastructure

The presence on and movement of construction workers on and off the site poses a potential safety threat to local famers and farm workers in the vicinity of the site. In addition, farm infrastructure, such as fences and gates, may be damaged and stock losses may also result from gates being left open and/or fences being damaged. Stock theft linked directly or indirectly to the presence of construction workers on the site also poses a risk to farming activities.

The presence of construction workers on the site increases the exposure of farming operations and livestock to the outside world, which, in turn, increased the potential risk of stock theft and crime. The potential risks (safety, livestock, and farm infrastructure) can be effectively mitigated by careful planning and managing the movement of construction on the site workers during the construction phase. Mitigation measures to address these risks are outlined below.

Table 4.3: Assessment of risk to safety, livestock, and damage to farm infrastructure

Nature: Potential risk to safety of farmers and farm workers, livestock and damage to farm infrastructure associated with the presence of construction workers on site		
	Without Mitigation	**With Mitigation**
Extent	Local (3)	Local (2)
Duration	Short term (2)	Short term (2)
Magnitude	Medium (6)	Low (4)
Probability	Probable (3)	Probable (3)
Significance	Medium (33)	Low (24)
Status	Negative	Negative
Reversibility	Yes, compensation paid for stock losses and damage to farm infrastructure etc.	Yes, compensation paid for stock losses and damage to farm infrastructure etc.
Irreplaceable loss of resources?	No	No
Can impact be mitigated?	Yes	
Mitigation: See below		
Residual impacts: No**,** provided losses are compensated for.		

Assessment of No-Go option

There is no impact as it maintains the current status quo.

Recommended mitigation measures

- Preparation and implementation of a Stakeholder Engagement Plan (SEP) prior to and during the construction phase.
- Preparation and implementation of a Community Health, Safety and Security Plan (CHSSP) prior to and during the construction phase.
- The construction area should be fenced off prior to the commencement of the construction phase. The movement of construction workers on the site should be confined to the fenced off area.
- The proponent should enter into an agreement with the local farmers in the area whereby damages to farm property etc. during the construction phase will be compensated for. The agreement should be signed before the construction phase commences.
- Traffic and activities should be strictly contained within designated areas.
- Strict traffic speed limits must be enforced on the farm.
- All farm gates must be closed after passing through.
- Contractors appointed by the proponent should provide daily transport for low and semi-skilled workers to and from the site. This would reduce the potential risk of trespassing on the remainder of the farm and adjacent properties.
- The proponent should consider the option of establishing a MF (see above) that includes local farmers and develop a Code of Conduct for construction workers. This committee

should be established prior to commencement of the construction phase. The Code of Conduct should be signed by the proponent and the contractors before the contractors move onto site.

- The proponent should hold contractors liable for compensating farmers and communities in full for any stock losses and/or damage to farm infrastructure that can be linked to construction workers. This should be contained in the Code of Conduct to be signed between the proponent, the contractors', and neighbouring landowners. The agreement should also cover loses and costs associated with fires caused by construction workers or construction related activities (see below).
- The Environmental Management Plan (EMP) must outline procedures for managing and storing waste on site, specifically plastic waste that poses a threat to livestock if ingested.
- Contractors appointed by the proponent must ensure that all workers are informed at the outset of the construction phase of the conditions contained on the Code of Conduct, specifically consequences of stock theft and trespassing on adjacent farms.
- Contractors appointed by the proponent must ensure that construction workers who are found guilty of stealing livestock and/or damaging farm infrastructure are dismissed and charged. This should be contained in the Code of Conduct. All dismissals must be in accordance with South African labour legislation.
- It is recommended that no construction workers, with the exception of security personnel, should be permitted to stay over-night on the site.

4.3.4 Increased risk of grass fires

The presence of construction workers and construction-related activities on the site poses an increased fire risk, which could, in turn, pose a threat grazing and livestock. Due to the climate and sparseness of vegetation, the study area is not considered veld fire prone. However, all the farming operations depend on grazing and any fires would have the potential to have a significant impact on the already stressed farming operations. The potential fire risk of grass fires is highest during the dry winter months (April-October). This period also coincides with dry, windy conditions in the area.

Table 4.4: Assessment of impact of increased risk of grass fires

Nature: Potential loss of livestock, crops and houses, damage to farm infrastructure and threat to human life associated with increased incidence of grass fires		
	Without Mitigation	**With Mitigation**
Extent	Local (4)	Local (2)
Duration	Short term (2)	short term (2)
Magnitude	Moderate due to reliance on agriculture for maintaining livelihoods (6)	Low (4)
Probability	Probable (3)	Probable (3)
Significance	Medium (36)	Low (24)
Status	Negative	Negative
Reversibility	Yes, compensation paid for stock and crop losses etc.	Yes, compensation paid for stock and crop losses etc.

Irreplaceable loss of resources?	No	No
Can impact be mitigated?	Yes	
Mitigation: See below		
Residual impacts: No**,** provided losses are compensated for.		

Assessment of No-Go option
There is no impact as it maintains the current status quo.

Recommended mitigation measures
The mitigation measures include:

- The proponent should prepare a Community Health, Safety and Security Plan (CHSSP) prior to commencement of the construction phase.
- The proponent should enter into an agreement with the local farmers in the area whereby damages to farm property etc., during the construction phase will be compensated for. The agreement should be signed before the construction phase commences.
- The option of establishing a fire-break around the perimeter of the site prior to the commencement of the construction phase should be investigated.
- Contractor should ensure that open fires on the site for cooking or heating are not allowed except in designated areas.
- Smoking on site should be confined to designated areas.
- Contractor to ensure that construction related activities that pose a potential fire risk, such as welding, are effectively managed and are confined to areas where the risk of fires has been reduced. Measures to reduce the risk of fires include avoiding working in high wind conditions when the risk of fires is greater. In this regard special care should be taken during the high risk dry, windy winter months.
- Contractor should provide adequate fire-fighting equipment on-site, including a fire fighting vehicle.
- Contractor to provide fire-fighting training to selected construction staff. No construction staff, with the exception of security staff, to be accommodated on site overnight.
- As per the conditions of the Code of Conduct, in the advent of a fire being caused by construction workers and or construction activities, the appointed contractors must compensate farmers for any damage caused to their farms. The contractor should also compensate the fire-fighting costs borne by farmers and local authorities.

4.3.5 Impacts associated with construction related activities

Construction activities on the site, including the movement of heavy construction vehicles, have the potential to create noise, dust, and safety impacts and damage roads, specifically unsurfaced roads. Experience from other projects also indicates that the transportation of construction workers to and from the site can result in the generation of waste along the route (packaging and bottles etc. thrown out of windows etc.). The preparation of the site and associated levelling and clearing of vegetation will expose the soil to wind and result in dust. The dust impacts will be exacerbated during windy periods.

The project components are also likely to be transported to the site via the N1, N12 and R61/R63, which are key transport routes linking Gauteng and the Western and Eastern Cape. Access to the site will be via the existing District gravel road between Nelspoort and

Murraysburg No. MR 587. The transport of components to the site therefore has the potential to impact on other road users travelling along these roads, including tourists. Measures will need to be taken to ensure that the potential impacts on motorists using the N1, N12 and R61 are minimised. The potential impacts on travelers and tourists can be effectively mitigated by restricting construction traffic movements to weekdays, and, where possible, limiting activities during over holiday periods, specifically Christmas and Easter holiday periods and other long weekends. The movement of heavy construction vehicles will also damage internal farm roads and other unsurfaced public roads that may be used to access the site. The damage will need to be repaired after the completion of the construction phase.

Table 4.5: **Assessment of the impacts associated with construction activities**

Nature: Potential noise, dust and safety impacts associated with construction activities and movement of traffic to and from the site		
	Without Mitigation	**With Mitigation**
Extent	Local (2)	Local (1)
Duration	Short Term (2)	Short Term (2)
Magnitude	Low (4)	Minor (2)
Probability	Probable (3)	Probable (3)
Significance	Low (24)	Low (15)
Status	Negative	Negative
Reversibility	Yes	Yes
Irreplaceable loss of resources?	No	No
Can impact be mitigated?	Yes	
Mitigation: See below		
Residual impacts: If damage to local farm roads is not repaired then this will affect the farming activities in the area and result in higher maintenance costs for vehicles of local farmers and other road users. The costs will be borne by road users who were not responsible for the damage.		

Assessment of No-Go option
There is no impact as it maintains the current status quo.

Recommended mitigation measures
The potential impacts associated with heavy vehicles can be effectively mitigated. The mitigation measures include:

- The proponent should prepare a Community Health, Safety and Security Plan (CHSSP) prior to commencement of the construction phase.
- As far as possible, the transport of components to the site along the N1, N12 and R61 should be planned to avoid weekends and holiday periods.
- The contractor should inform local farmers and representatives from the BWM and relevant provincial road authorities of dates and times when abnormal loads will be undertaken.
- The contractor must ensure that damage caused by construction related traffic to the gravel public roads and local, internal farm roads is repaired on a regular basis throughout

the construction phase. The costs associated with the repair must be borne by the contractor.
- Dust suppression measures must be implemented for heavy vehicles such as wetting of gravel roads on a regular basis[12], adhering to speed limits and ensuring that vehicles used to transport sand and building materials are fitted with tarpaulins or covers.
- All vehicles must be roadworthy, and drivers must be qualified and made aware of the potential road safety issues and need for strict speed limits.
- The Contractor should ensure that workers are informed that no waste can be thrown out of the windows while being transported to and from the site. Workers who throw waste out windows should be fined.
- The Contractor should be required to collect waste along access roads on a weekly basis.
- Waste generated during the construction phase should be transported to the local permitted landfill site.
- EMPr measures (and penalties) should be implemented to ensure farm gates are closed at all times.
- EMPr measures (and penalties) should be implemented to ensure speed limits are adhered to at all times.

4.4 OPERATIONAL PHASE SOCIAL IMPACTS

The following key social issues are of relevance to the operational phase:

Potential positive impacts
- Improved energy security and establishment of energy infrastructure.
- Creation of employment, skills development, and business opportunities.
- Generate income for landowners.

Potential negative impacts
- The visual impacts and associated impact on sense of place.
- Loss of farm land and impact on farming operations.
- Impact of maintenance activities on farming activities and operations.

4.4.1 Improved energy security and development of energy infrastructure

The proposed power line is essential to enable the development and operation of Poortjie Wes PV SEF Cluster. The primary goal of the Cluster is to improve energy security in South Africa by generating renewable energy. The proposed power line should therefore be viewed within the context of the South Africa's current power supply constraints and the reliance on coal powered energy to meet most of its energy needs.

South Africa's energy crisis, which started in 2007 and is ongoing, has resulted in widespread rolling blackouts (referred to as load shedding) due to supply shortfalls. The load shedding has had a significant impact on all sectors of the economy and on investor confidence. The mining and manufacturing sector have been severely impacted and will continue to be impacted until such time as there is a reliable supply to energy. Load shedding in the first six months of 2015 was estimated to have cost South African businesses R13.72 billion in lost revenue with an additional R716 million was spent by businesses on backup generators[13]. A survey of 3 984 small business owners found that 44% said that they had been severely

[12] Treated effluent (non-potable) water should be used for wetting of roads and construction areas
[13] Goldberg, Ariel (9 November 2015). "The economic impact of load shedding: The case of South African retailers" (PDF). Gordon Institute of Business Science. p. 109

affected by load shedding with 85% stating that it had reduced their revenue, with 40% of small businesses losing 20% or more or revenue during due to load shedding period[14].

Table 4.6: Improve energy security and develop energy infrastructure

Nature: Development of infrastructure to generate clean, renewable energy		
	Without Enhancement	**With Enhancement**
Extent	Local, Regional and National (3)	Local, Regional and National (3)
Duration	Long term (4)	Long term (4)
Magnitude	Moderate (6)	Moderate (6)
Probability	Highly Probable (4)	Definite (5)
Significance	Medium (52)	High (65)
Status	Positive	Positive
Reversibility	Yes	
Irreplaceable loss of resources?	N/A	N/A
Can impact be mitigated?	Yes	
Enhancement: See below		
Residual impacts: Overall reduction in CO_2 emission, reduction in water consumption for energy generation, contribution to establishing an economically viable commercial renewables generation sector in the Northern Cape and South Africa.		

Assessment of No-Go option
The No-Development option would represent a lost opportunity for South Africa to supplement its current energy needs with clean, renewable energy.

Recommended mitigation measures
Should the project be approved the proponent should:

- Implement a skills development and training programme aimed at maximising the number of employment opportunities for local community members.
- Maximise opportunities for local content, procurement, and community shareholding.

4.4.2 Creation of employment and business opportunities

The potential employment opportunities associated with the power line will be limited and largely confined to periodic maintenance and repairs. The potential socio-economic benefits will therefore be limited.

[14] "How does load shedding affect small business in SA?". *The Yoco Small Business Pulse (3: Q1 2019):*

Table 4.7: Impact assessment of employment and business creation opportunities

Nature: Creation of employment and business opportunities associated with the operational phase		
	Without Enhancement	**With Enhancement**
Extent	Local and Regional (1)	Local and Regional (1)
Duration	Long term (4)	Long term (4)
Magnitude	Minor (2)	Minor (2)
Probability	Probable (3)	Highly Probable (4)
Significance	Low (21)	Medium (32)
Status	Positive	Positive
Reversibility	N/A	N/A
Irreplaceable loss of resources?	No	No
Can impact be enhanced?	Yes	
Enhancement: See below		
Residual impacts: Creation of permanent employment and skills and development opportunities for members from the local community and creation of additional business and economic opportunities in the area		

Assessment of No-Go option
There is no impact as it maintains the current status quo. However, the potential opportunity costs in terms of the loss of employment and skills and development training would be lost.

Recommended enhancement measures
The enhancement measures listed in Section 4.4.1, i.e. to enhance local employment and business opportunities during the construction phase, also apply to the operational phase.

4.4.3 Generate income for affected landowner

The proponent will be required to either purchase the land or enter into a rental agreement with the affected landowners for the use of the land for the establishment of the proposed grid infrastructure. Based on the findings of the SIA the area is prone to droughts and farming operations can be challenging. Any additional source of income therefore represents a significant benefit for the affected landowner(s). The additional income would assist to reduce the risks to their livelihoods posed by droughts and fluctuating market prices for sheep and farming inputs, such as fuel, feed etc. The additional income would improve economic security of farming operations, which in turn would improve job security of farm workers and benefit the local economy.

Table 4.8: Assessment of benefits associated with income generated for the affected farmer

Nature: The generation of additional income represents a significant benefit for the local affected farmer(s) and reduces the risks to their livelihoods posed by droughts and fluctuating market prices for sheep and farming inputs, such as feed etc.		
	Without Enhancement	**With Enhancement**
Extent	Local (1)	Local (1)
Duration	Long term (4)	Long term (4)
Magnitude	Minor (2)	Low (4)
Probability	Probable (3)	Highly Probable (4)
Significance	Low (21)	Medium (36)
Status	Positive	Positive
Reversibility	N/A	N/A
Irreplaceable loss of resources?	No	No
Can impact be enhanced?	Yes	
Enhancement: See below		
Residual impacts: Support for local agricultural sector and farming		

Assessment of No-Go option
There is no impact as it maintains the current status quo.

Recommended enhancement measures
Implement agreements with affected landowner.

4.4.4 Visual impact and impact on sense of place

The proposed grid connection infrastructure has the potential to impact on the areas existing rural sense of place. The findings of the VIA (Nuleaf, 2022) are summarized below:

- The potential visual impact of the facility on sensitive visual receptors within 0.5km (residents of homesteads/dwellings and users of the secondary roads), in close proximity to the proposed facility is likely to be **high.**
- The possible visual impact of the facility on the residents' homesteads and users of secondary road on the periphery of the 0.5km offset and within the region beyond is likely to be of **moderate** significance.
- The potential visual impact of the associated infrastructure on residents of homesteads/dwellings and users of the secondary road within close proximity of the proposed facility is likely to be of **moderate** significance and may be mitigated to **low** should the possible best practice mitigation measures be implemented.

- The potential visual impact of construction on sensitive visual receptors in close proximity to the facility is likely to be of **moderate** significance before mitigation and **low** post mitigation.
- The anticipated visual impact of operational lighting at night on sensitive visual receptors within the study area is likely to be of **moderate** significance and may be mitigated to **low** should the possible best practice mitigation measures be implemented.
- The potential visual impact of the proposed development on the visual quality of the landscape and sense of place of the region is likely to be of **moderate** significance both before and after mitigation.
- The potential cumulative visual impact on sensitive visual receptors within the region is likely to be of **moderate** significance.

The overall conclusion of the VIA is that the post mitigation significance of the visual impacts is predominately **moderate** to **low.** A **high** significance rating is anticipated for users travelling along the secondary roads and residents of dwellings within 0.5 km from the proposed infrastructure. However, due to the low number/ density of homesteads/dwellings within the study area and the fact that observers travelling along the secondary road will only experience a visual intrusion for a short period of time, this impact is anticipated to be greatly reduced. The VIA notes that the visual impacts are not considered to be fatal flaws for a development of this nature particularly due to the remote location of the study area and very low density of visual receptors. The development of the proposed grid connection is therefore supported from a visual perspective, subject to the implementation of the suggested best practice mitigation measures listed in the VIA. The site is also located within the Beaufort West REDZ and Central Transmission Corridor. The area has therefore been identified as suitable for the establishment of renewable energy facilities and associated grid infrastructure.

Table 4.9: Visual impact and impact on sense of place

Nature: Visual impact associated with the proposed solar facility and the potential impact on the area's rural sense of place and adjacent land uses.		
	Without Mitigation	**With Mitigation**
Extent	Local (1)	Local (1)
Duration	Long term (4)	Long term (4)
Magnitude	Moderate (6)	Moderate (6)
Probability	Probable (3)	Probable (3)
Significance	Medium (33)	Medium (33)
Status	Negative	Negative
Reversibility	Yes, solar facility can be removed.	
Irreplaceable loss of resources?	No	No
Can impact be mitigated?	Yes	
Mitigation: See below		
Residual impacts: Support for local agricultural sector and farming		

Assessment of No-Go option
There is no impact as it maintains the current status quo.

Recommended mitigation measures
The recommendations contained in the Final VIA should also be implemented.

4.4.5 Impact on farming operations

Based on the findings of interviews with affected landowners the footprint impacts associated with the substation sites are limited. All the substation sites would affect small portions of large properties. The sites would occupy natural veld used exclusively for grazing to the north and east of the Nelspoort-Murraysburg tar road. The owners of Hamelkuil (73/2) indicated that the Collector Substation site and both transmission line options were acceptable (Herhold, pers. comm). The owner of Belvedere 73/1 indicated that Option A was the preferred transmission line alignment given that it is located along the Nelspoort-Murraysburg Road corridor. Option B located to the north of the road was not regarded as suitable as it would impact on a portion of the property that is used for seasonal commercial hunting. Potential impacts are related to sense of place/ visual, potential safety restrictions. This would compromise the best hunting area on the property also compromise the camp infrastructure that has been established for commercial hunting in the area. This is pertinent, as another portion of the property would be sterilized to hunting, should the proposed Montana PV 3 facility be constructed (Vivier, pers. comm).

Table 4.10: Impact on farming operations

Nature: Potential risk to farming operations and livestock associated with presence of maintenance workers on the site		
	Without Mitigation	**With Mitigation**
Extent	Local (2)	Local (1)
Duration	Short term (2)	Short term (2)
Magnitude	Moderate (6)	Low (4)
Probability	Probable (3)	Probable (3)
Significance	Medium (30)	Low (21)
Status	Negative	Negative
Reversibility	Yes, solar facility can be removed.	
Irreplaceable loss of resources?	No	No
Can impact be mitigated?	Yes	
Mitigation: See below		
Residual impacts: No**,** provided losses are compensated for.		

Assessment of No-Go option
There is no impact as the current status quo would be maintained.

Recommended mitigation measures

- Option A is the preferred transmission line alignment

4.4.6 Impact of maintenance on farming operations[15]

The impacts associated with presence maintenance workers are related to stock losses as result of farm gates being left open and or damaged and damage to fences. The presence of maintenance workers on the site also increases the exposure of their farming operations and livestock to the outside world, which, in turn, increased the potential risk of stock theft and crime. Based on experience with maintenance of the existing Eskom power lines this is an issue that will need to be addressed. The comments from the directly affected land owners on these issues are summarized below

The potential risks (safety, livestock, and farm infrastructure) can be mitigated by ensuring the maintenance teams take care to ensure that gates are kept closed and affected property owners are kept informed about timing of maintenance operations. Mitigation measures to address these risks are outlined below.

Table 4.11: Assessment of risk of maintenance to farming operations

Nature: Potential risk to farming operations and livestock associated with presence of maintenance workers on the site		
	Without Mitigation	**With Mitigation**
Extent	Local (2)	Local (1)
Duration	Short term (2)	Short term (2)
Magnitude	Moderate (6)	Low (4)
Probability	Probable (3)	Probable (3)
Significance	Medium (30)	Low (21)
Status	Negative	Negative
Reversibility	Yes, solar facility can be removed.	
Irreplaceable loss of resources?	No	No
Can impact be mitigated?	Yes	
Mitigation: See below		
Residual impacts: No**,** provided losses are compensated for.		

Assessment of No-Go option

There is no impact as the current status quo would be maintained.

Recommended mitigation measures

- Affected property owners should be notified in advance of the timing and duration of maintenance activities.

[15] The impacts are similar to the impacts associated with construction phase.

- Maintenance teams must ensure that all farm gates must be closed after passing through.
- Property owners should be compensated for damage to farm property and or loss of livestock or game associated maintenance related activities.
- Movement of traffic and maintenance related activities should be strictly contained within designated areas associated with transmission lines and substations.
- Strict traffic speed limits must be enforced on the farm.
- No maintenance workers should be allowed to stay over-night on the affected properties.

4.5 CUMULATIVE IMPACT ON SENSE OF PLACE

The VIA notes that there are already existing high voltage power lines that traverse the study area, namely the Droerivier/hydra 2 400 kV and Gamma/Kappa 1 765 kV and the droerivier/Hyrda 1&3 400 kV overhead lines. The addition of the proposed Poortjie Wes Cluster Grid Connection will therefore result in an increase in this type of infrastructure within the region and could result in a cumulative visual impact. However, the site is located within the Beaufort West REDZ. The area has therefore been identified as suitable for the establishing of large scale renewable energy facilities and associated grid infrastructure.

Table 4.12: Cumulative impacts on sense of place and the landscape

Nature: Visual impacts associated with the establishment of more than one transmission line and the potential impact on the area's rural sense of place and character of the landscape.		
	Overall impact of the proposed project considered in isolation	**Cumulative impact of the project and other projects in the area**
Extent	Local (1)	Local and regional (2)
Duration	Long term (4)	Long term (4)
Magnitude	Low (4)	Low (4)
Probability	Probable (3)	Probable (3)
Significance	Low (27)	Medium (30)
Status (positive/negative)	Negative	Negative
Reversibility	Yes. Grid infrastructure can be removed.	
Loss of resources?	No	No
Can impacts be mitigated?	Yes	
Confidence in findings: High.		
Mitigation: See below		

Assessment of No-Go option
There is no impact as it maintains the current status quo.

Recommended mitigation measures
The recommendations of the VIA should be implemented.

4.6 ASSESSMENT OF NO-DEVELOPMENT OPTION

The proposed grid infrastructure is essential to enable the proposed Poortjies Wes PV SEF Cluster to connect to the national electricity grid to address the current energy supply

constraints and reduce South Africa's reliance on coal generated energy. As indicated above, energy supply constraints and associated load shedding have had a significant impact on the economic development of the South African economy. South Africa also relies on coal-powered energy to meet more than 90% of its energy needs. South Africa is therefore one of the highest per capita producers of carbon emissions in the world and Eskom, as an energy utility, has been identified as the world's second largest producer of carbon emissions.

The No-Development option would represent a lost opportunity for South Africa to improve energy security and supplement is current energy needs with renewable energy. Given South Africa's current energy security challenges and its position as one of the highest per capita producers of carbon emissions in the world, this would represent a negative social cost.

Table 4.13: Assessment of no-development option

Nature: The no-development option would result in the lost opportunity for South Africa to supplement is current energy needs with clean, renewable energy		
	Without Mitigation	**With Mitigation[16]**
Extent	Local-International (4)	Local-International (4)
Duration	Long term (4)	Long term (4)
Magnitude	Moderate (6)	Moderate (6)
Probability	Highly Probable (4)	Highly Probable (4)
Significance	Moderate (56)	Moderate (56)
Status	Negative	Positive
Reversibility	Yes	
Irreplaceable loss of resources?	N/A	N/A
Can impact be mitigated?	Yes	
Enhancement: See below		
Residual impacts: Reduce carbon emissions via the use of renewable energy and associated benefits in terms of global warming and climate change.		

Recommended enhancement measures

The proposed facility should be developed, and the mitigation and enhancement measures identified in the SIA and other specialist studies should be implemented. However, the impact of large solar facilities on the sense of place and landscape are issues need to be addressed in the location, design, and layout of the proposed facility.

[16] Assumes establishment of a Community Trust

SECTION 5: KEY FINDINGS AND RECOMMENDATIONS

5.1 INTRODUCTION

Section 5 lists the key findings of the study and recommendations. These findings are based on:

- A review of the issues identified during the Scoping Process.
- A review of key planning and policy documents pertaining to the area.
- Site visit and semi-structured interviews with interested and affected parties.
- A review of social and economic issues associated with similar developments.
- The experience of the authors with other solar energy projects in South Africa.

5.2 SUMMARY OF KEY FINDINGS

The key findings of the study are summarised under the following sections:

- Fit with policy and planning.
- Construction phase impacts.
- Operational phase impacts.
- Cumulative Impacts.
- Decommissioning phase impacts.
- No-development option.

5.2.1 Policy and planning issues

The findings of the review indicate that renewable energy is strongly supported at a national, provincial, and local level. At a national level the development of and investment in renewable energy is supported by the National Development Plan (NDP), New Growth Path Framework and National Infrastructure Plan, which all refer to renewable energy. Renewable energy is also supported at a provincial and local municipal level. The proposed site is also located within the Beaufort West REDZ. The area has therefore been identified as suitable for the establishment of large-scale solar energy facilities and associated infrastructure. The BWM IDP and SDF also support the development of renewable energy.

5.2.2 Construction phase

The key social issues associated with the construction phase include:

Potential positive impacts

- Creation of employment and business opportunities, and the opportunity for skills development and on-site training.

The construction phase will extend over a period of approximately 3-6 months and create in the region of 23-40 employment opportunities. The total wage bill will be in the region of R 1.5 million (2022 Rand values). Most of the low and semi-skilled employment opportunities are likely to benefit residents from local towns in the area, specifically Beaufort West. Most the beneficiaries are likely to be historically disadvantaged (HD) members of the community.

This would represent a short term positive social benefit in an area with limited employment opportunities. A percentage of the wage bill will be spent in the local economy which will also create opportunities for local businesses in KHM.

The capital expenditure associated with the construction of power line will be ~15-20 million (2022 Rand values) and will create opportunities for the local and regional and local economy. The sector of the local economy most likely to benefit from the proposed development is the local service industry. The potential opportunities for the local service sector would be linked to accommodation, catering, cleaning, transport, and security, etc. associated with the construction workers on the site. However, given the relatively small scale of the development and short construction period the benefits will be limited.

Potential negative impacts
- Impacts associated with the presence of construction workers on local communities.
- Noise, dust, and safety impacts of construction related activities and vehicles.
- Risk of veld fires.
- Risks posed to farming activities by construction workers.

The findings of the SIA indicate that the significance of the potential negative impacts is likely to be negligible. With mitigation they are rated as **Low Negative**. The potential negative impacts associated with the proposed construction of the power line can therefore be effectively mitigated if the recommended mitigation measures are implemented.

Table 5.1 summarises the significance of the impacts associated with the construction phase.

Table 5.1: Summary of social impacts during construction phase

Impact	Significance No Mitigation / Enhancement	Significance With Mitigation / Enhancement
Creation of employment and business opportunities	Low (Positive)	Low (Positive)
Presence of construction workers and potential impacts on family structures and social networks	Low (Negative)	Low (Negative)
Impact of construction activities and vehicles	Low (Negative)	Low (Negative)
Risk of veld fires	Moderate Negative)	Low (Negative)
Safety risk, stock theft and damage to farm infrastructure associated with presence of construction workers	Moderate Negative)	Low (Negative)

5.2.3 Operational phase impacts

The benefits associated with the Poortjies Wes PV SEF Cluster are dependent upon being able to connect to the national grid. The key social issues associated with the operational phase include:

Potential positive impacts
- Improve energy security and establishment of energy infrastructure.
- Creation of employment, skills development, and business opportunities.

- Generate income for landowners.

Potential negative impacts
- The visual impacts and associated impact on sense of place.
- Impact on farming operations
- Risks posed to farming activities by maintenance workers.

The findings of the SIA indicate that the significance of the potential negative impacts is likely be **Low Negative** if the required mitigation measures are effectively implemented.

The significance of the impacts associated with the operational phase are summarised in Table 5.2.

Table 5.2: Summary of social impacts during operational phase

Impact	Significance No Mitigation / Enhancement	Significance With Mitigation / Enhancement
Improve energy security and establishment of energy infrastructure	Moderate (Negative) [17]	Moderate (Positive) [18]
Creation of employment, skills development, and business opportunities during maintenance	Low (Positive)	Moderate (Positive)
Generate income for landowners	Low (Positive)	Moderate (Positive)
Visual impact and impact on sense of place	Low (Negative)	Low (Negative)
Impact on farming operations	Moderate (Negative)	Low (Negative)
Safety risk, stock theft and damage to farm infrastructure associated with presence of maintenance workers	Moderate (Negative)	Low (Negative)

5.2.4 Cumulative impact on sense of place

The VIA notes that there are already existing high voltage power lines that traverse the study area, namely the Droerivier/hydra 2 400 kV and Gamma/Kappa 1 765 kV and the droerivier/Hyrda 1&3 400 kV overhead lines. The addition of the proposed Poortjie Wes Cluster Grid Connection will therefore result in an increase in this type of infrastructure within the region and could result in a cumulative visual impact. However, the site is located within the Beaufort West REDZ. The area has therefore been identified as suitable for the establishing of large scale renewable energy facilities and associated grid infrastructure.

5.2.5 Assessment of no-development option

The No-Development option would represent a lost opportunity for South Africa to improve energy security and supplement is current energy needs with renewable energy. Given South

[17] Assumes grid infrastructure is not developed
[18] Assumes grid infrastructure is developed

Africa's current energy security challenges and its position as one of the highest per capita producers of carbon emissions in the world, this would represent a negative social cost.

5.3 CONCLUSION AND RECOMMENDATIONS

Conclusion
The energy security benefits associated with the proposed Poortjie Wes PV SEF Cluster are dependent upon it being able to connect to the national grid via the establishment of grid connection infrastructure.

The findings of the SIA indicate that the significance of the potential negative social impacts for both the construction and operational phase of the proposed grid infrastructure are **Low Negative** with mitigation. The potential negative impacts can therefore be effectively mitigated if the recommended mitigation measures are implemented. The grid infrastructure is also located within the Beaufort West REDZ and Central Transmission Corridor. The establishment of proposed grid infrastructure for the Poortjie Wes PV SEF Cluster is therefore supported by the findings of the SIA.

Recommendation
Option A transmission line alignment located parallel to the Nelspoort-Murraysburg Road is the preferred option.

ANNEXURE A

INTERVIEWS

- Herholdt, Mr Carel (telephonic 2022-05-30). Belvedere 73/2 and Kruidontein 161/RE
- Koster, Mr Ralph (telephonic 2022-05-30). Montana 123/3/RE and 123/4.
- Tawse, Mr Peter (telephonic 2022-05-27; 2022-05-30). Poortjie 76 and Louws Baken 77.
- Vivier, Mr Gideon (telephonic 2022-05-27; 2022-05-31). Belvedere 73/1 and Montana 123/1.

REFERENCES

- National Energy Act (2008).
- White Paper on the Energy Policy of the Republic of South Africa (December 1998).
- White Paper on Renewable Energy (November 2003).
- Integrated Resource Plan (IRP) for South Africa (2019).
- The National Development Plan (2011).
- New Growth Path Framework (2010).
- National Infrastructure Plan (2012).
- National Integrated Energy Plan (2016)
- White Paper on Sustainable Energy for the Western Cape Province (2010).
- The Western Cape Provincial Strategic Plan 2014-2019 (2014).
- The Western Cape Land Use Planning Act, 2014.
- The Western Cape Provincial Spatial Development Framework (2014 Revision).
- The Western Cape Climate Change Response Strategy (2014).
- The Western Cape Infrastructure Framework (2013).
- The Western Cape Green Economy Strategy Framework (2013).
- The One Cape 2040 Strategy (2012).
- The Western Cape Amended Zoning Scheme Regulations for Commercial Renewable Energy Facilities (2011).
- The Western Cape Draft Strategic Plan (2010).
- Beaufort West Municipality Integrated Development Plan (IDP)(2019/2020).
- Beaufort West Spatial Development Framework (SDF)(2013).

INTERNET

- https://www.steenbokkie.co.za (Steenbokkie PNR).

ANNEXURE B

METHODOLOGY FOR THE ASSESSMENT OF POTENTIAL IMPACTS

Direct, indirect and cumulative impacts of the above issues, as well as all other issues identified will be assessed in terms of the following criteria:

- The **nature**, which shall include a description of what causes the effect, what will be affected and how it will be affected.
- The **extent**, where it will be indicated whether the impact will be local (limited to the immediate area or site of development), regional, national or international. A score between 1 and 5 will be assigned as appropriate (with a score of 1 being low and a score of 5 being high).
- The **duration**, where it will be indicated whether:
  - the lifetime of the impact will be of a very short duration (0–1 years) – assigned a score of 1;
  - the lifetime of the impact will be of a short duration (2-5 years) - assigned a score of 2;
  - medium-term (5–15 years) – assigned a score of 3;
  - long term (> 15 years) - assigned a score of 4; or
  - permanent - assigned a score of 5.
- The **magnitude**, quantified on a scale from 0-10, where a score is assigned:
  - 0 is small and will have no effect on the environment;
  - 2 is minor and will not result in an impact on processes;
  - 4 is low and will cause a slight impact on processes;
  - 6 is moderate and will result in processes continuing but in a modified way;
  - 8 is high (processes are altered to the extent that they temporarily cease); and
  - 10 is very high and results in complete destruction of patterns and permanent cessation of processes.
- The **probability** *of occurrence*, which shall describe the likelihood of the impact actually occurring. Probability will be estimated on a scale, and a score assigned:
  - Assigned a score of 1–5, where 1 is very improbable (probably will not happen);
  - Assigned a score of 2 is improbable (some possibility, but low likelihood);
  - Assigned a score of 3 is probable (distinct possibility);
  - Assigned a score of 4 is highly probable (most likely); and
  - Assigned a score of 5 is definite (impact will occur regardless of any prevention measures).
- The **significance**, which shall be determined through a synthesis of the characteristics described above (refer formula below) and can be assessed as low, medium or high.
- The **status**, which will be described as either positive, negative or neutral.
- The *degree* to which the impact can be *reversed*.
- The *degree* to which the impact may cause *irreplaceable loss of reso*urces.
- The *degree* to which the impact can be *mitigated.*

The **significance** is determined by combining the criteria in the following formula:

S=(E+D+M)P; where

S = Significance weighting
E = Extent
D = Duration

M = Magnitude
P = Probability

The **significance weightings** for each potential impact are as follows:

- < 30 points: Low (i.e. where this impact would not have a direct influence on the decision to develop in the area),
- 30-60 points: Medium (i.e. where the impact could influence the decision to develop in the area unless it is effectively mitigated),
- > 60 points: High (i.e. where the impact must have an influence on the decision process to develop in the area).

ANNEXURE C

10 Firs Avenue, Claremont, 7708, South Africa
(Cell) 082 600 8266
(E-Mail) tony@tonybarbour.co.za

Tony Barbour's has 28 years' experience as an environmental consultant, including ten years as a consultant in the private sector followed by four years at the University of Cape Town's Environmental Evaluation Unit. He has worked as an independent consultant since 2004, with a key focus on Social Impact Assessment. His other areas of interest include Strategic Environmental Assessment and review work.

EDUCATION

- BSc (Geology and Economics) Rhodes (1984);
- B Economics (Honours) Rhodes (1985);
- MSc (Environmental Science), University of Cape Town (1992)

EMPLOYMENT RECORD

- Independent Consultant: November 2004 – current;
- University of Cape Town: August 1996-October 2004**:** Environmental Evaluation Unit (EEU), University of Cape Town. Senior Environmental Consultant and Researcher;
- Private sector: 1991-August 2000: 1991-1996**:** Ninham Shand Consulting (Now Aurecon, Cape Town). Senior Environmental Scientist; 1996-August 2000: Steffen, Robertson and Kirsten (SRK Consulting) – Associate Director, Manager Environmental Section, SRK Cape Town.

LECTURING

- University of Cape Town: Resource Economics; SEA and EIA (1991-2004);
- University of Cape Town: Social Impact Assessment (2004-current);
- Cape Technikon: Resource Economics and Waste Management (1994-1998);
- Peninsula Technikon: Resource Economics and Waste Management (1996-1998).

RELEVANT EXPERIENCE AND EXPERTISE

Tony Barbour has undertaken in the region of 260 SIA's, including SIA's for infrastructure projects, dams, pipelines, and roads. All of the SIAs include interacting with and liaising with affected communities. In addition he is the author of the Guidelines for undertaking SIA's as part of the EIA process commissioned by the Western Cape Provincial Environmental Authorities in 2007. These guidelines have been used throughout South Africa.

Tony was also the project manager for a study commissioned in 2005 by the then South African Department of Water Affairs and Forestry for the development of a Social Assessment and Development Framework. The aim of the framework was to enable the Department of Water Affairs and Forestry to identify, assess and manage social impacts associated with large infrastructure projects, such as dams. The study also included the development of guidelines for Social Impact Assessment, Conflict Management, Relocation and Resettlement and Monitoring and Evaluation.

Countries with work experience include South Africa, Namibia, Angola, Botswana, Zambia, Lesotho, Swaziland, Ghana, Mozambique, Mauritius, Kenya, Ethiopia, Oman, South Sudan, Senegal, Sudan and Armenia.

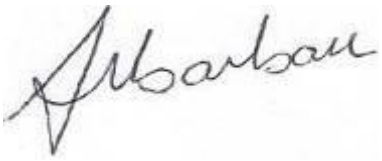
ANNEXURE D

The specialist declaration of independence in terms of the Regulations_

I, Tony Barbour, declare that -- General

declaration:

I act as the independent specialist in this application;
I will perform the work relating to the application in an objective manner, even if this results in views and findings that are not favourable to the applicant;
I declare that there are no circumstances that may compromise my objectivity in performing such work;
I have expertise in conducting the specialist report relevant to this application, including knowledge of the Act, Regulations and any guidelines that have relevance to the proposed activity;
I will comply with the Act, Regulations and all other applicable legislation;
I have no, and will not engage in, conflicting interests in the undertaking of the activity;
I undertake to disclose to the applicant and the competent authority all material information in my possession that reasonably has or may have the potential of influencing - any decision to be taken with respect to the application by the competent authority; and - the objectivity of any report, plan or document to be prepared by myself for submission to the competent authority;
all the particulars furnished by me in this form are true and correct; and
I realise that a false declaration is an offence in terms of regulation 48 and is punishable in terms of section 24F of the Act.



Signature of the specialist:

Tony Barbour Environmental Consulting and Research

Name of company (if applicable):

117 May 2022

Date: